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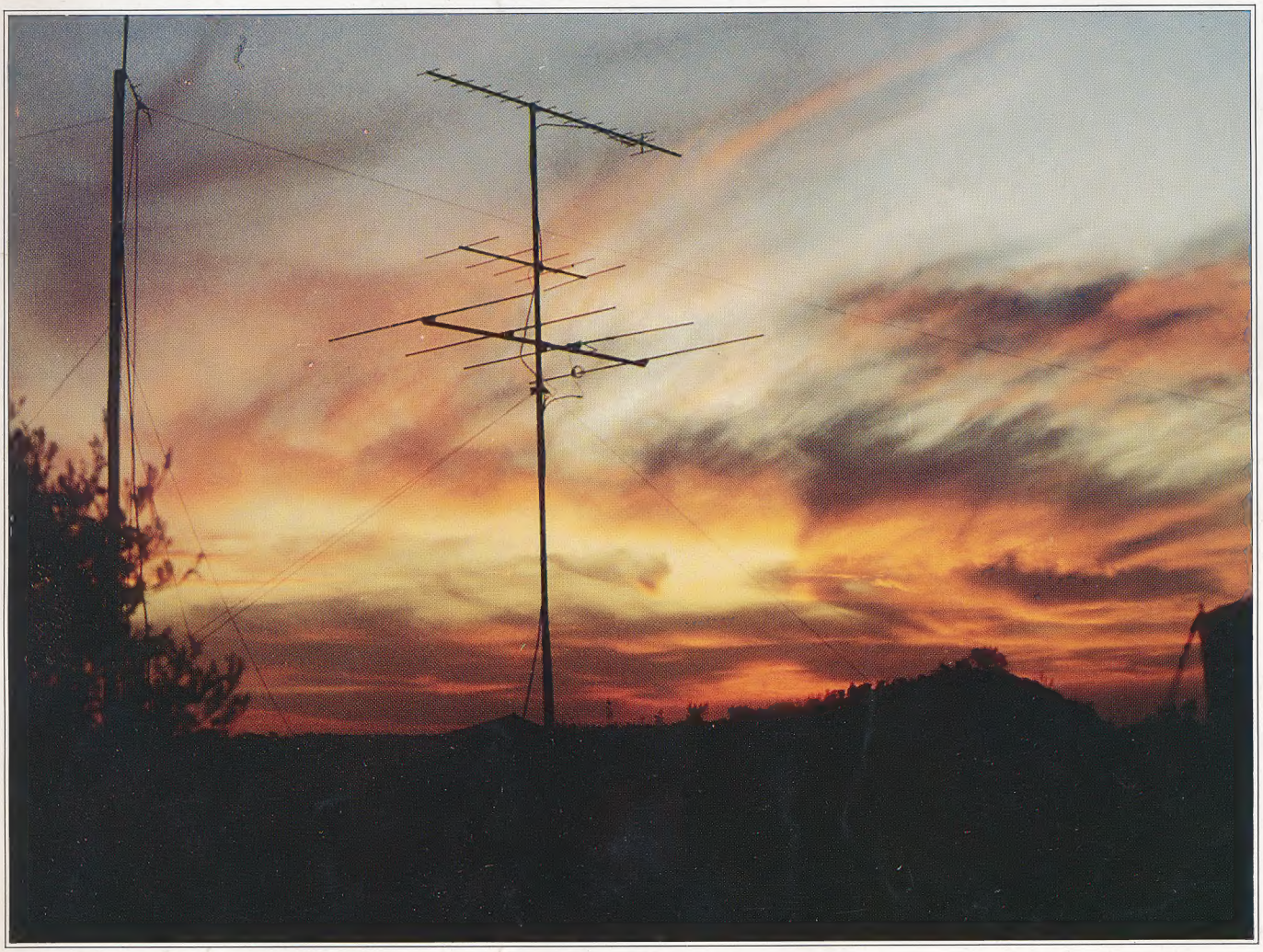
AMATEUR RADIO

WIRELESS INSTITUTE OF AUSTRALIA

Journal of the Wireless Institute of Australia



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Cover

At the North East Radio Group's station VK3NE located at Mount Macedon on the Saturday evening of the John Moyle Field Day. The HF antennas are on the mast at the left, and the 6 m, 2 m and 70 cm antennas are on the other mast.

Photo by Greg Williams VK3VT

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Editor's Comment

A Happy Jubilee

This year of 1995 is notable in many areas, being the 50th anniversary of the end of World War 2, in Europe in May and the Pacific in August. But resulting from this there is an even happier anniversary coming up in December. During the War all amateur radio operation was suspended. In Australia all amateur equipment was impounded "for the duration", so could not be used anyway, even if many of the pre-war operators had not joined the Armed Forces.

But, in December 1945, the impounded equipment was returned to its owners, new regulations were introduced by the Government, and licences were re-issued to those who applied for them. Some were able to "get back on the air" early in December and start making contacts. The only HF band authorised at first was 28-29 MHz but, by February 1946, many stations were active and some international contacts had been made.

Victorian Division notes in *Amateur Radio* for February 1946 list 15 stations as active. Of these only three operators are still living. Unfortunately, there were no corresponding lists published from the other states so only a sketchy outline of VK activity generally is available.

The question now is *who made the first post-war amateur contact in Australia?* The Old Timers' Club would be delighted to find out, as no doubt would the Federal Historian. Can any reader enlighten us, please?

Bill Rice VK3ABP
Editor
ar

WIA News

Amateur Wins International Science Award

Scientist, Dr Ken McCracken VK2CAX, a radio amateur and founding chief of the CSIRO's Division of Mineral Physics, has shared the 1995 Australia Prize, awarded to researchers who have made outstanding contributions to science and technology promoting human welfare.

An international award, the $300,000 prize was shared with Dr Andrew Green and Dr Jonathan Huntington, of the CSIRO Division of Exploration and Mining, and Dr Richard Moore, Emeritus Professor of Electrical and Computer Engineering at the University of Kansas, USA.

The award was announced in February by Senator Peter Cook, the Minister for Science. Senator Cook said Dr McCracken, Dr Green and Dr Huntington were an outstanding research team which had pioneered satellite-based remote sensing in Australia. In the late-1970s, Dr McCracken coordinated a propagation study, Project ASERT, for the Federal WIA.

WIA News

Recommencement of Amateur Radio after WWII

Ideas and suggestions are being put forward on how Australian amateurs can mark the 50th anniversary of the recommencement of amateur radio here after the end of World War II. As many amateurs know, amateur radio was banned during World War II.

At the outbreak of hostilities, radio amateurs received telegrams directing that they surrender their transmitters. The equipment was locked away for the duration of the war. When the war ended in August 1945, there was considerable effort to get amateur radio re-established. The government of the day was busy with post-war activities, including soldier resettlement, and amateur radio took a back seat. However, new regulations for amateur radio were gazetted on 24 November, 1945.

Preparations for the 50th anniversary of this important milestone in amateur radio history are in hand, with research being conducted by Herb Stevens VK3JO. Herb is researching the events leading up to, and immediately subsequent to the post-war recommencement.

Not a great deal of information and detail is available at present. Who were those radio amateurs to first get back on the air, and which bands did they use?

Herb would like to hear from anyone with information or recollections. His address is QTHR in the 1995 Call Book.

In the meantime, a number of possible ways of celebrating the recommencement have been put forward, including commemorative callsigns or a special prefix, and a nation-wide period of reunion on-air by those immediate post-war radio amateurs.

Ideas should be put to your Division's Council for consideration of both state activities and possible Federal WIA sponsored events.

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers			Weekly News Broadcasts		1995 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Secretary Treasurer	Rob Apathy Len Jones Don Hume	VK1KRA VK1NLJ VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm. Repeated on Wednesday evening at 8.00 pm on 3.570 MHz LSB, 146.950 MHz FM and 438.525 MHz FM.	(F) (G) (S) (X)	$70.00 $56.00 $42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Secretary Treasurer (Office hours	Michael Corbin Pixie Chapple Peter Kloppenburg Mon-Fri 11.00-14.00 Mon 1900-2100)	VK2PFQ VK2KPC VK2CPK	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24,950, 28.320, 52.120, 52,525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2m, 70 cm, 23 cm. Voicemail highlights on (02) 724 8793. The broadcast text is available on packet.	(F) (G) (S) (X)	$66.75 $53.40 $38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261 Fax (03) 885 9298	President Secretary Treasurer (Office hours	Jim Linton Barry Wilton Rob Hailey Tue & Thur 0830-1530)	VK3PC VK3XV VK3XLZ	MONTHLY BROADCAST on the second Sunday of the month, starts 10.30 am. Primary frequencies 3.615 LSB, 7.085 LSB, and FM(R)s 146.700 Mt Dandenong, 147.250 Mt Macedon, 147.225 Mt Baw Baw, and 2 m FM(R)s VK3RMA, VK3RSH, VK3ROW. 70 cm FM(R)s VK3ROU and VK3RGL. Major news under call VK3WI on Victorian packet BBS.	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (074) 96 4714	President Secretary Treasurer	 Lance Bickford Rodger Bingham	 VK4ZAZ VK4HD	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Garry Herden Maurie Hooper Charles McEachern	VK5ZK VK5EA VK5KDK	1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555, 7065, 10125, 146.700, 0900 hrs Sunday	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 434 3283	President Secretary Treasurer	Cliff Bastin Ray Spargo Bruce Hedland-Thomas	VK6LZ VK6RR VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) (G) (S) (X)	$60.75 $48.60 $32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Secretary Treasurer	Andrew Dixon Ted Beard Phil Harbeck	VK7GL VK7EB VK7PU	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) (G) (S) (X)	$69.00 $55.65 $40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).						

Note: All times are local. All frequencies MHz.

Membership Grades

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Three-year membership available to (F) (G) (X) grades at fee x 3 times.

■ Transceivers

A 150 Watt Handheld Transceiver

Paul Kay VK4DJ describes a somewhat unusual piece of amateur equipment.*

The homebrew 150 W handheld alongside a commercial 0.7 W sideband HT.

Technical Editor's Note

Whilst this article describes the transceiver as a hand held unit, its weight and size would probably preclude many people from operating it as such for long. Another point to consider is the potential danger of operating in close proximity to equipment, such as this, that can generate very high RF fields. For these two reasons, it is probably a better idea to operate a unit such as this as a desk mounted portable rather than as a handheld.

At first sight, the thought of a hand held base station seems ridiculous. But then, why not be able to work DX on Sunday outings? This article doesn't blaze any new electronic trail, nor am I going to tell you where to find wondrous new black boxes. Quite the contrary. I am going to describe a simple but effective handheld talking machine that will allow you to work the world whilst getting you out of the rut and the black box syndrome.

As far as I know, any technical articles on HF handhelds previously published only extend up to a power level of 15 watts. That is clearly not sufficient if we are going to rake in the DX. Unless that guy on the other continent hears you, no QSO. Therefore, we don't want kids' stuff here, we want results.

Technical Description

Figure 1 shows the block diagram of the transceiver and the

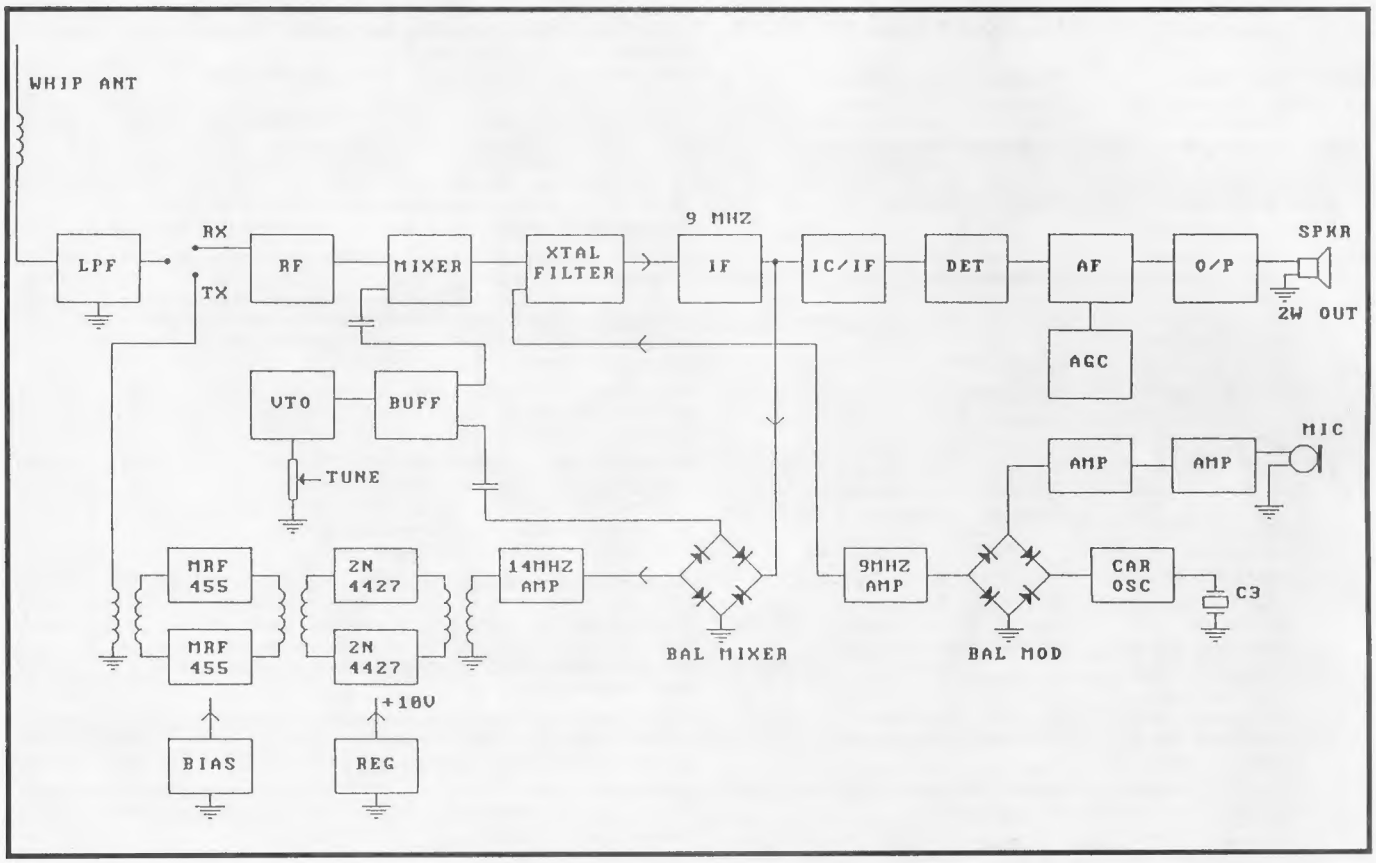
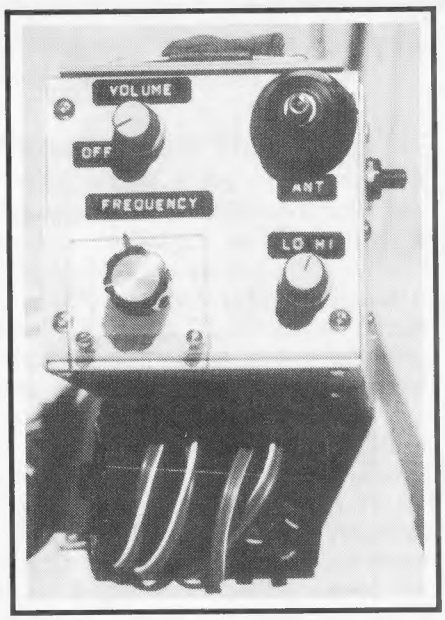


Fig 1 — Block diagram of the 150 W HF handheld transceiver.

photographs show how it is assembled.

Figure 2 shows the complete circuit diagram of the transceiver. It operates over the range of 14000 to 14350 kHz. It is single conversion, with an IF of 9 MHz. The voltage tuned oscillator (VTO) operates between 5000 and 5350 kHz. RIT is included with a range of +/−2 kHz. The receiver has an audio output of 2.5 W, feeding an inbuilt speaker. A pill microphone for the transmitter is also behind the speaker grille. A fitting for an external microphone would be a good idea as well. The xtal filter and the 9 MHz IF amplifier are common to both transmit and receive. On transmit a balanced mixer is used, followed by a 14 MHz tuned amplifier. This feeds a broadband push-pull driver followed by a broadband power amplifier using a pair of MRF455 transistors, also in push-pull. The output transistors are mounted directly on the back panel which is an effective heatsink. A multisection low pass filter cleans up the signal before it reaches the whip aerial.



Top panel view of the 150 W handheld with a plug pack beneath it.

The aerial terminal is a screw on type. A fibreglass type whip, about 1800 mm long, is used with a centre loading coil. The fibre glass whip is hollow and supports a wire up the inside, thereby providing protection against shock or burns. A helical whip, about 1070 mm long, has also been used. Heat shrink tubing is used on any exposed parts of the whip or base to prevent shocks or burns.

The output power is about 80-120 W under 2-tone conditions, the same as your average transceiver. The inbuilt battery consists of 2 x 6 V/7.5 Ah, maintenance free, recombination electrolyte batteries. The voltage under normal operation is about 13.8 V but it can rise as high as 15.5 V after an overnight charge. A plug-in pack is used at home whilst, when mobile, the battery is topped up via the cigarette lighter plug.

A large meter decorates the front panel. On receive it displays signal strength and on transmit it indicates RF output. The meter originally measured PA current on transmit with a FSD of 20 A but experience showed that indicating RF output was of more value.

The rig measures about 115 mm by 115 mm by 250 mm high, and weighs

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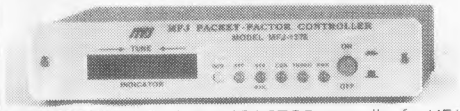

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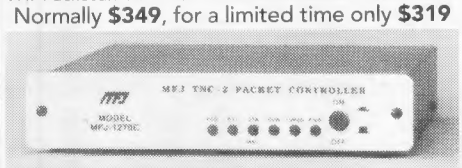

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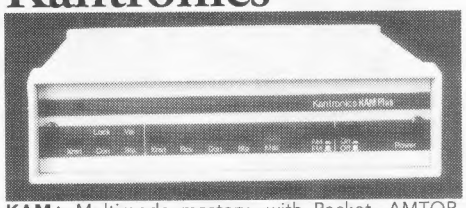

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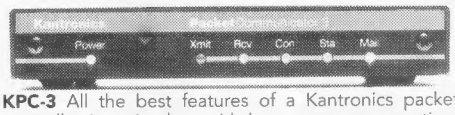

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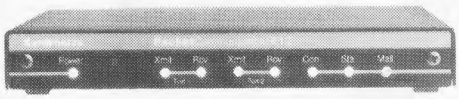

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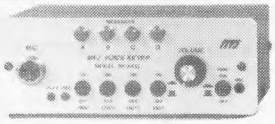

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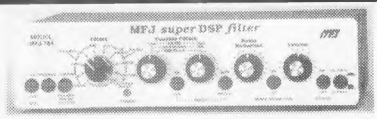

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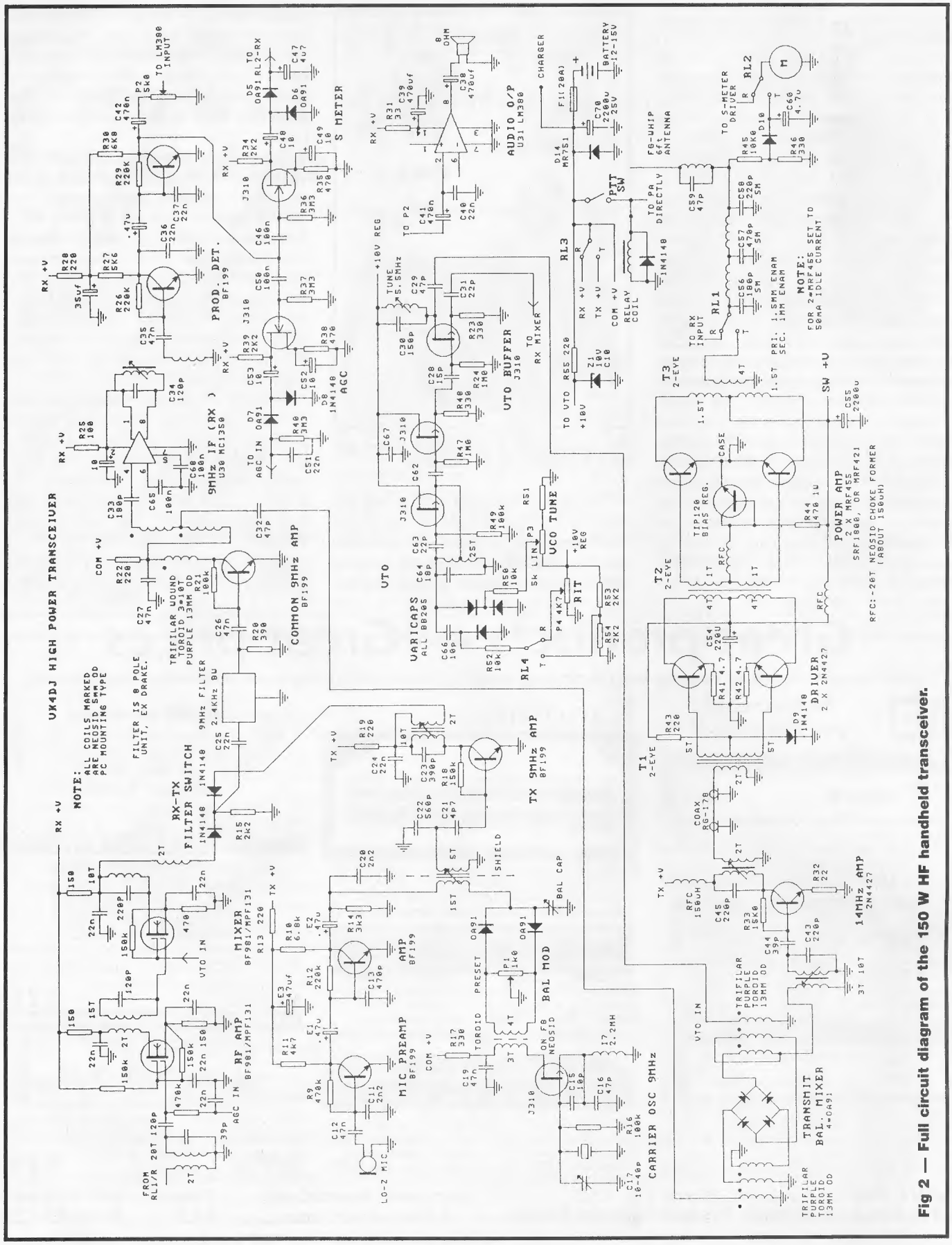
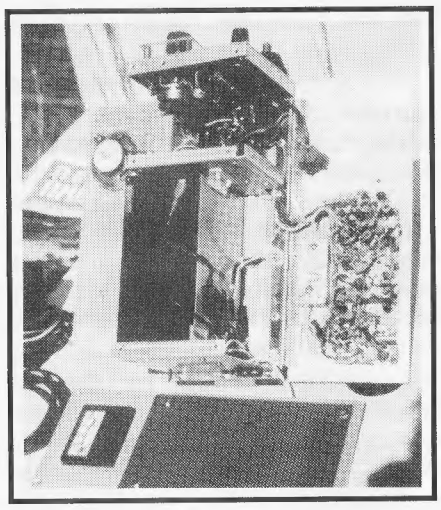


Fig 2 — Full circuit diagram of the 150 W HF handheld transceiver.



An inside view of the 150 W handheld transceiver (the side panels swing out on piano hinges).

a hefty 3.5 kg, which means it will stand stably on its base. If you want to use it handheld, the left hand will fit snugly under the carry strap and will operate the PTT. This leaves the right hand free to take notes.

Construction Tips

This article is not meant to be a blow by blow construction article. Any one interested in building a transceiver such as this would probably not want to duplicate it totally, anyway. Therefore, the circuit diagram and some of the following tips should be adequate for most would be constructors.

The VTO coil is tapped about 1/3 of the way from the ground end and is coupled to the buffer via a 15 pF capacitor. The original VTO and other junction FETs used the 2N3819 which is no longer available. However, the U310 (or J310) can be used as a replacement.

I used a 50 by 100 mm "ugly board" type construction for the main board. The push pull driver and the PA small components are on a separate 50 by 50 mm board. All driver and PA transformers use "2-eye" balun cores with no metal tubes or any other accessories. The PA transistors are bolted directly on the back panel. This means that if you talk too much whilst hand holding the unit, you can get a very hot hand. A good reason for short overs. Different RF output transistors can be used, which will result in different output powers. A pair of 2N5591s will produce 70 watts output, whilst a pair of MRF421s will deliver 200 watts output. The last mentioned pair are, however, a little brutal on batteries. The MRF455 are, therefore, a good compromise.

*435 Ross River Road, Cranbrook QLD 4814

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■ Transmitters

Back to Basics 40 or 80 m Transmitter

Neville Chivers VK2YO describes a companion transmitter to his experimenter's basic receiver.*

This is a follow up article to the **Back to Basics 40 or 80 m Receiver,** published in the January 1995 issue of *Amateur Radio* magazine. This transmitter is also built from readily available components and the construction method used is the same as for the receiver.

The receiver VFO may be used to make this little rig tuneable or you may decide to use the crystal locked oscillator. The choice is up to you. The complete circuit is provided in Figure 1 and Figure 2, showing a simple SSB transmitter using an MC1496 as a mixer, two diodes for the modulator, a 741 for the mike amplifier, a hand full of ceramic filters and associated coils, three FETs, two bipolar devices, and that's it!

Circuit Description

Figure 1 shows the carrier oscillator, which uses a CSB455E ceramic resonator as the frequency control element. The frequency of the oscillator is set at 453.5 kHz by the 3-30 pF trimming capacitor. The supply to the MPF102 is regulated at 8.2 V by a 1N4738 zener diode and a 100 ohm series resistor. The primary winding of a miniature 455 kHz IF transformer is connected between the drain of the oscillator and the 8.2 V supply; the primary (large) winding measured approximately 4 Ω. The secondary winding, which is about 0.25 Ω, has a 1 kΩ potentiometer connected across this winding, with the wiper connected to earth.

This pot is used as the carrier balance control, and two matched point contact germanium diodes (OA95) are connected across the secondary winding to form a passive balanced modulator. To select these diodes, measure the forward and reverse resistance of both diodes and choose diodes with the same readings. If chosen correctly, the balance control will be in its central position.

The carrier null can be checked in several ways. The simplest way is to use a general coverage receiver in AM mode, connect the antenna of the receiver to the output from the junction of the OA95 diodes, tune the receiver to 453.5 kHz for maximum output, and a heterodyne should be present. Adjust the Tx balance pot until a zero beat is obtained and the receiver "S" meter reading should reduce to near zero.

If you have already built the **Back to Basics Receiver,** this can also be used to check the carrier balance. Disconnect the DC supply to the HF oscillator and mixer in the receiver, then couple the junction of the OA95 diodes to the input of the IF strip in AM mode. Turn on the BFO and rotate the balance pot until the heterodyne

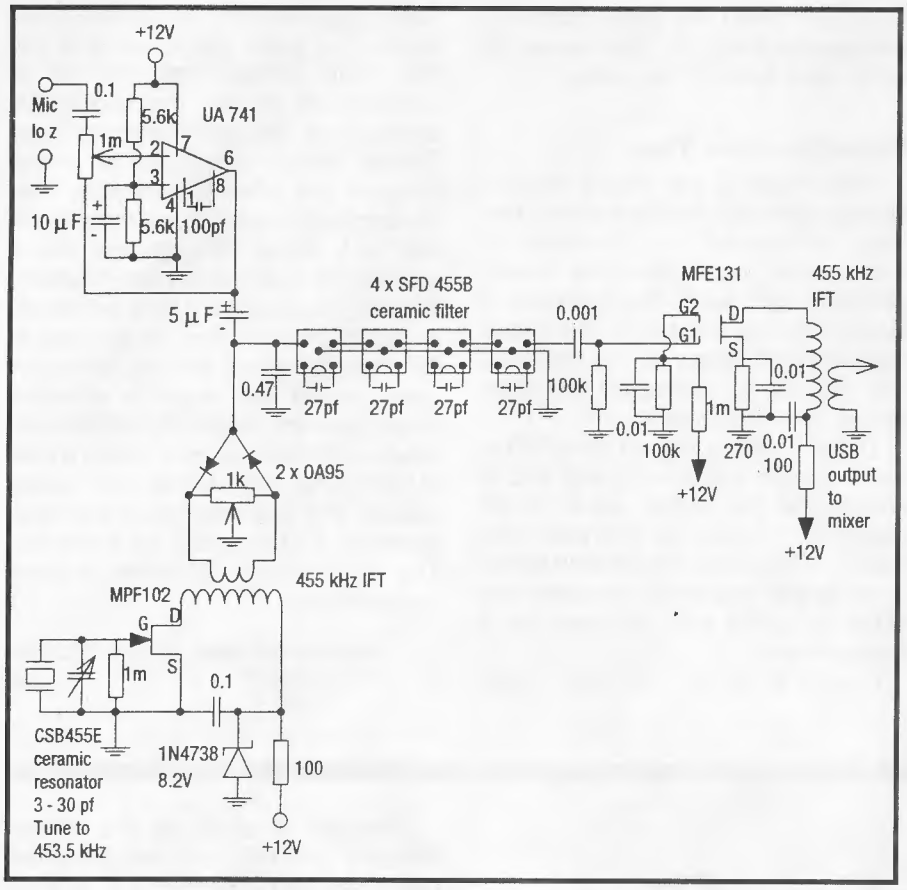

Fig 1 — SSB generator.

cannot be heard. A slight adjustment of the BFO may be required if the note cannot be heard as the two oscillators could be in exact zero beat. Once the modulator is balanced, a double sideband signal will be available at the input to the IF filter by unbalancing the modulator with the audio signal from the µA741 microphone amplifier.

The double sideband signal may be monitored in the same way as the carrier balance check. By shifting the receiver BFO frequency both sidebands should be individually apparent with a fixed tone applied to the microphone input. Once you have established that a double sideband signal is available, the signal must be stripped of its lower sideband by four SFD455 ceramic filters which are coupled together on the non dimple side (see the circuit). Each filter section is tuned by a 27 pF capacitor.

At the output end of the filter should appear the upper sideband signal at 455 kHz. The reason that the carrier oscillator is not set on 456.5 kHz to produce lower sideband, is because I tried to pass LSB and found that the filter inverted the signal. It appears that the filter only wanted to pass USB.

This does not matter providing that you take this into consideration when mixing this signal to the desired final frequency. That is why I selected the VFO in the **Back to Basics Receiver** to be on the high side of the incoming signal at 3.5 MHz or 7 MHz with a view to using the same VFO for receive and transmit to produce LSB on 40 and 80 as normal.

Again the **Back to Basics Receiver** can be used to monitor the quality of the USB signal at 455 kHz. Better still, if you have a commercial receiver which has an USB/LSB switch and can receive 455 kHz directly, you will be able to check the opposite sideband rejection in relation to the passband of the filter. I found that 27 pF was about right — 18 pF made the signal sound too thin, whilst 33 pF was too broad.

The filter is followed by an MPF131 amplifier to boost the small signal to the required level for injection into the mixer stage in Figure 2. The mixer is the popular MC1496 double balanced mixer IC. The USB signal is applied to pin 1 and the VFO or HF oscillator to pin 10. A suitable crystal oscillator is shown if you wish to operate on a

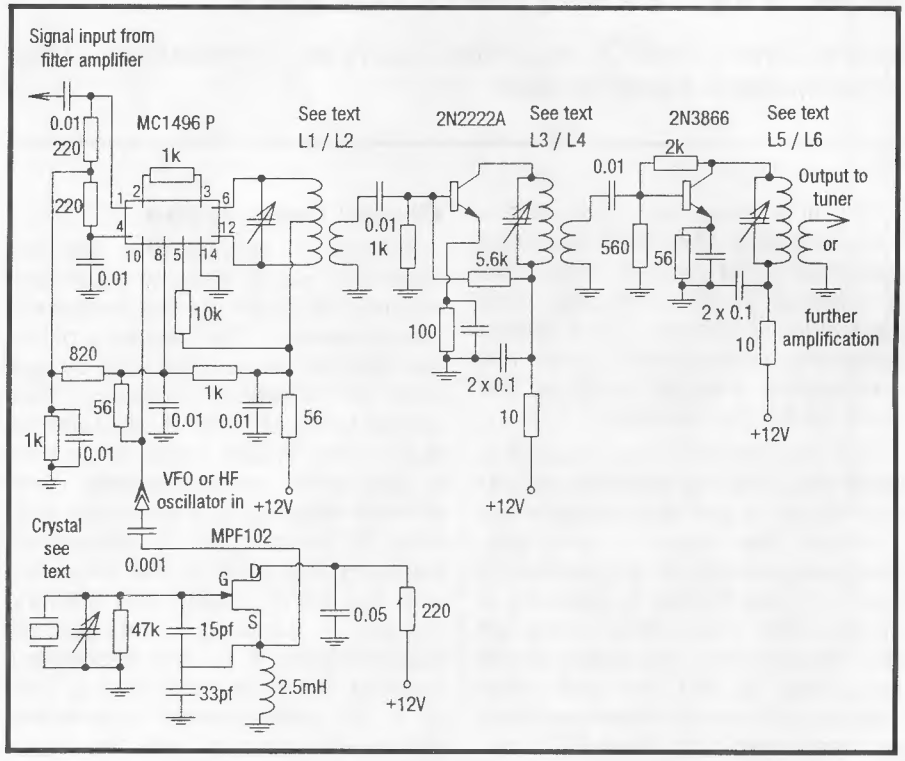

Fig 2 — Mixer, oscillator and amplifiers.

single frequency, or if the receiver oscillator is not stable enough for transmitter use.

The output signal is taken from pins 6 and 12 via a tuned circuit which is resonant at the final frequency, 455 kHz below the VFO frequency or crystal oscillator. This will produce LSB on 40 and 80 metres. Note that the 12 volt supply to the IC MC1496 is via the centre tap of L1. The coils L1/L2, L3/L4 and L5/L6 combinations are all the same windings at the required frequency (see winding data).

Following the mixer is a two stage amplifier using a 2N2222 and a 2N3866 to bring the power up to about 1 watt of RF on either 40 or 80 metres. If you wish, you could further amplify the output. Circuits for larger linears can be found in various text books.

Winding Data

Coils L1, L3 and L5 have the same data; L2, L4 and L6 are wound at the bottom of the former. All windings are close wound with 0.5 mm wire (Jaycar WW 4016). The 80 metre winding is 35 turns close wound which is resonated by a 4-40 pF trimmer shunted by a 100 pF styroseal capacitor.

For 40 metres the winding is 25 turns close wound resonated by a 4-40 pF trimmer only. Both the 80 and 40 coils secondary windings comprise four turns on the lower part of the former (see Figure 3).

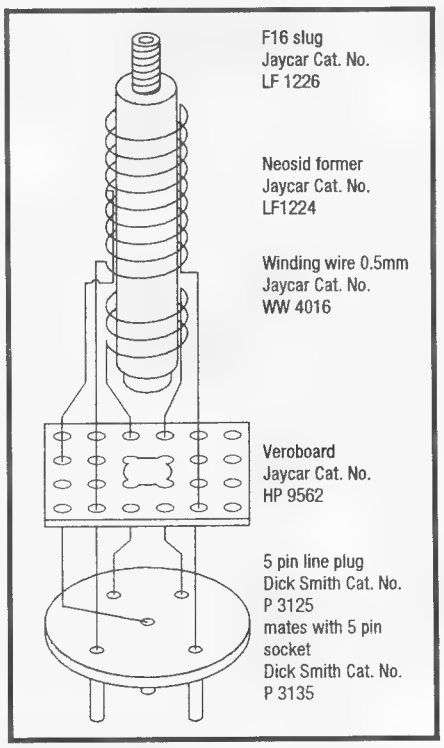

Fig 3 — Coil details.
Coil winding details for L1, L3, & L5:
80 m — 35 turns close wound, resonated by 4-40 pF trimmer (Jaycar Cat No RV5726 plus 100 pF in parallel).
40 m — 25 turns close wound, resonated by 4-40 pF trimmer (Jaycar Cat No RV5726.
L2, L4, & L6 — 4 turns at bottom of coil form.

Results

I have mostly tested this project on 40 metres during the daytime, simply because there is usually someone around and not much QRM or QRN to smother a weak signal. 80 metres is only possible at night but the QRN is around S8-S9 in the Blue Mountains where I live. We also get the occasional thunderstorm in summer which makes operating difficult. I have had a lot of fun with this project and would like to thank the following amateurs who were kind enough to reply to my test CQs. They were patient and offered constructive comment. Thanks to George VK2GP, Eugowra; John VK2WF, Armidale; Len VK3LP, Campbell's Creek; Ron VK3BRC, Melbourne (now SK); Reg VK3CEJ, Melbourne; and Geoff VK4ANP, Esk. There were many others and, as you can see, I was able to get up and down the East Coast and covered a fair distance. Keep up the good work and keep home brewing.

*51 Meeks Crescent, Faulconbridge NSW 2776

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Parts Suppliers

To assist you in obtaining the major parts, I have prepared a table of suppliers.

Part Number	Supplier Part No	Supplier	
OA95	Z 3050	Dick Smith Electronics	
1N4738	Z 3535	Dick Smith Electronics	
UA741	Z 6382	Dick Smith Electronics	
MPF102	Z 1832	Dick Smith Electronics	
MFE131	Z 1849	Dick Smith Electronics	
2N2222A	Z 2069	Dick Smith Electronics	
2N3866		VSI Electronics	
MC1496		VSI Electronics	
Crystals		Bright Star	PO Box 335 Vermont 3133
Slugs	L1,L3,L5 LF1226 (F16)	Jaycar	3 off
Formers	LF1224	Jaycar	3 off
455 kHz IFT	LF1050	Jaycar	2 off
0.5 mm wire	WW4016	Jaycar	as required
5 Pin plug	P3125	Jaycar	3 off
5 Pin Socket	P3135	Jaycar	3 off
Vero board	HP9562	Jaycar	1 off
Trimmer caps	RV 5726	Jaycar	3 off

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Technical

An L of a Network — Part 2

Graham Thornton VK3IY continues his analysis of the L-Match from last month.*

High Resistance Output

In this case, we have a shunt output reactance in the network. For this reason, it is more convenient to convert our complex load to the form of its equivalent parallel impedance.

OK, now trot off to Figures 8(a) & 8(b) armed with your series impedance figures, and bring back their parallel equivalents. As before, the output reactance is the starting point. We need the parallel equivalent load resistance to solve the equation:

$$|X_{SHUNT}| = R_{LOAD} \cdot \sqrt{\frac{50}{R_{LOAD} - 50}}\ \Omega$$

Having entered our value of equivalent parallel resistance in Figure 9, we can obtain the magnitude of X_{SHUNT}. As before, let's try both options about a capacitive or an inductive reactance. The reactance obtained includes that of the load. Note that the minimum possible value is 100 Ω.

The magnitude of the series input reactor can be found from:

$$|X_{SERIES}| = \sqrt{50 \,.\, (R_{LOAD} - 50)}\ \Omega$$

Figure 9 shows this in graphical form. For values higher than shown, each reactor may be taken as $\sqrt{(50.R_{LOAD})}$.

We need to find the value of the network lumped output reactance, having taken the parallel equivalent load reactance into account. Combining parallel reactances we have:

$$\frac{1}{X_{SHNET}} = \frac{1}{X_{SHUNT}} - \frac{1}{X_{LOAD}}\ (S)$$

(Having regard for sign — positive for inductive, negative for capacitive reactance.)

The above expression is plotted in two separate parts. Figure 10(a) shows the situation when a shunt inductor is used in the network, and Figure 10(b) is for a shunt capacitor. The formula is awkward to display in meaningful form; the method finally chosen results in hyperbolic scales, which may present some difficulty with interpolation. The graphs are limited to showing only practical values of reactance for the network. If X_{SERIES} is capacitive and X_{LOAD} is a smaller inductive reactance than X_{SHUNT}, then both legs of the network will be capacitors.

Figure 8(b) is divided into four rectangles. Area (1) defines the region where low resistance output is appropriate. Region (2) defines where only high impedance output may be used. For impedances which lie in region (3), the L network may be used either way around. Area (4) is a no-go situation. In the latter case, series resistances greater than 50 Ω have parallel equivalents LESS that 50 Ω and the network can not cope with this. If you find yourself in this untuneable black hole, the solution is as simple as it is obvious. Insert series reactance such that the parallel equivalent resistance is greater than 50 Ω, and you move into region (2) (ie the system becomes a T-Match — this is the only condition where such a device has any advantage over a simple L-Network). The two diagrams may be used to experiment for the necessary values (feel free — be my guest!). The same procedure may be adopted if, for any reason, it is desired to move from region (1) into region (3).

In next month's final episode, power rating and insertion loss will be considered.

**17 Britannia Creek Road, Wesburn VIC 3799*

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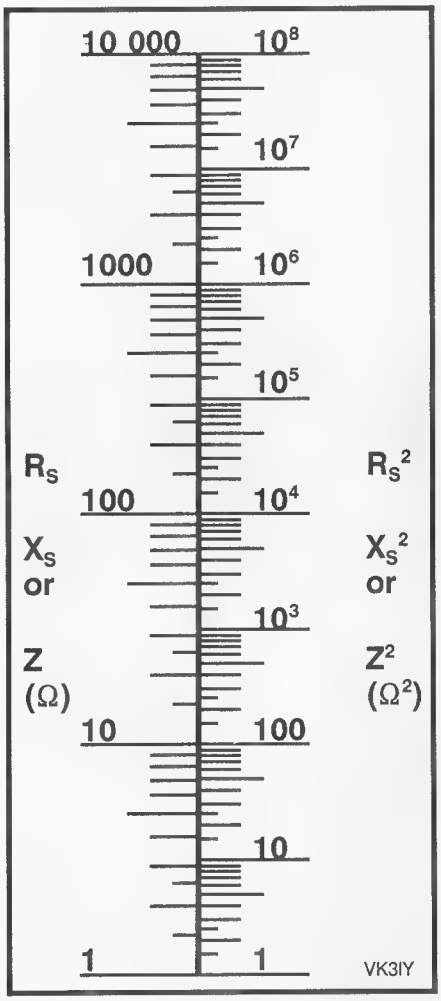
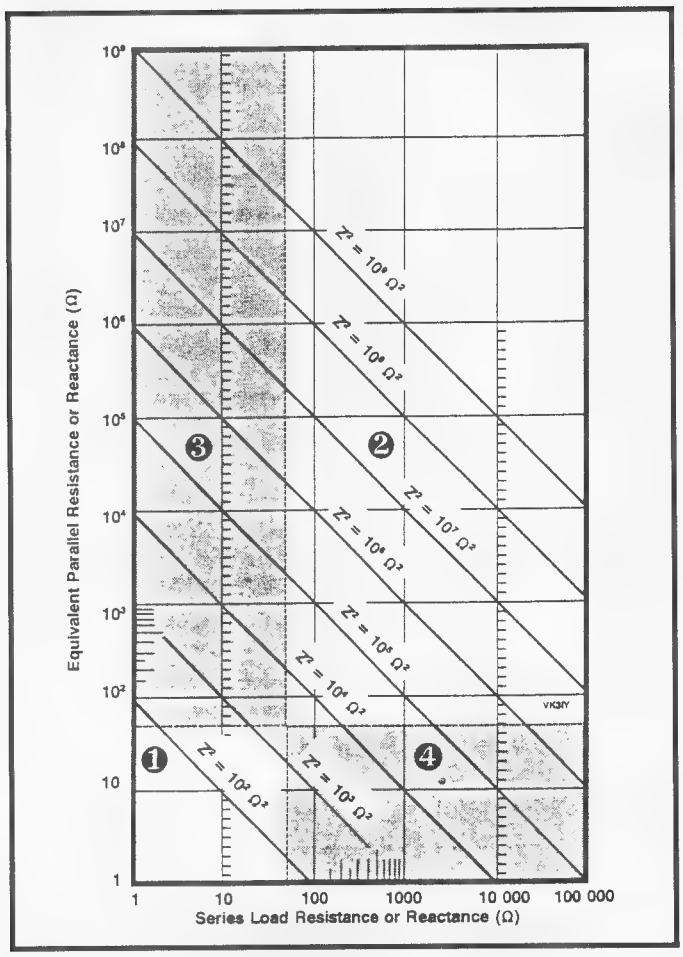


Fig 8(a) — Impedance chart. To use Fig 8(b) we need to know Z^2 ie $R_S^2 + X_S^2$. If you are happy to calculate this, please do so. Otherwise, the nomograph above may be used. Enter R and X on the left; the right hand scale will give their squares. Add these together to get Z^2. This chart may be used as a general impedance calculator. The sum of the squares entered at the right will give impedance on the left.

Opposite Page

Bottom Left: Fig 10(a) — Value of shunt inductor to use for high resistance output, taking equivalent parallel load reactance into account. X_{SHUNT} may be taken as positive or negative, but note that points south of the horizontal axis require that both arms of the network be inductors. Having plotted both values of known reactances, it may be necessary to interpolate for values of X_{SHNET} between those shown. Each graph represents a particular shunt inductive reactance for the network.

Bottom Right: Fig 10(b) — Value of shunt capacitor to use for high resistance output, considering load reactance. For all points above the horizontal axis, both arms of the network will be capacitors. Note that there is a degree of overlap between this and the previous diagram.



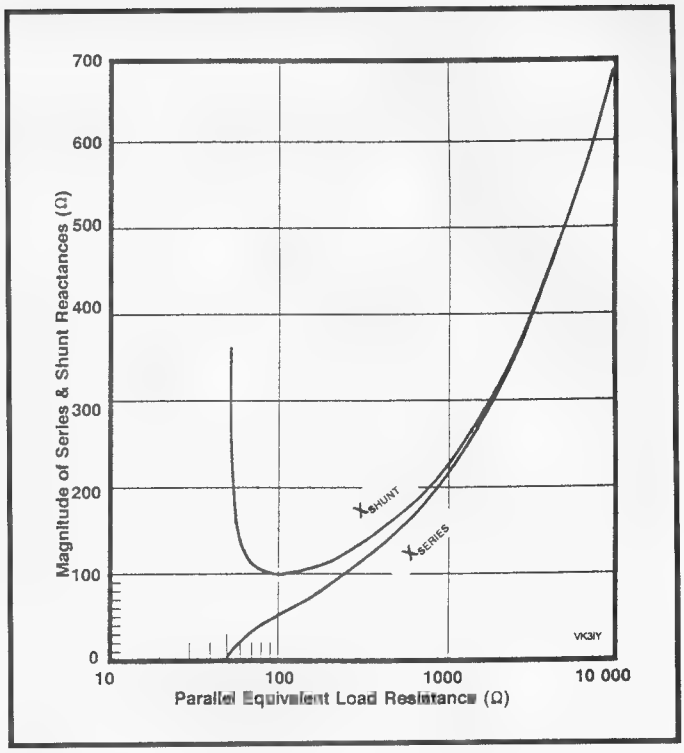
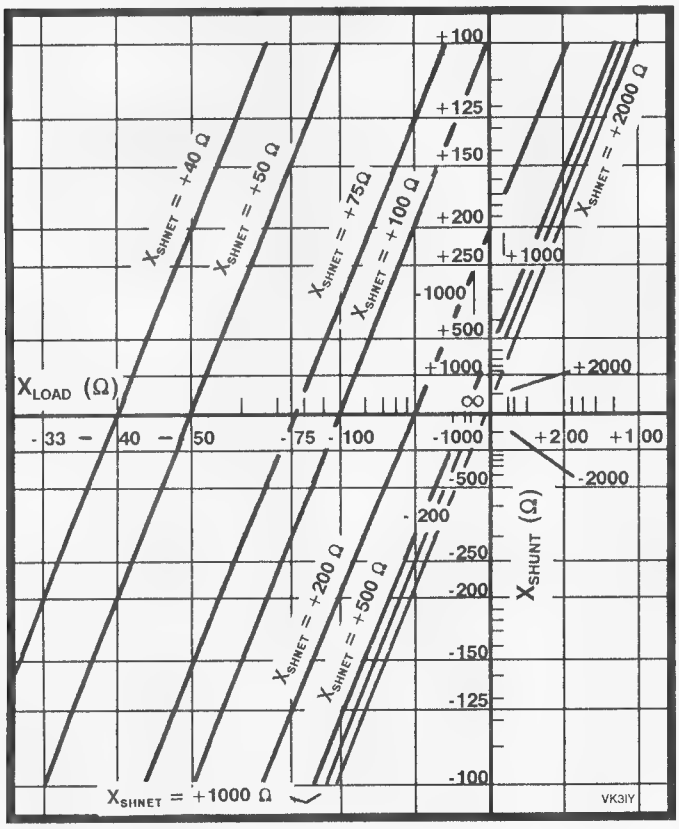
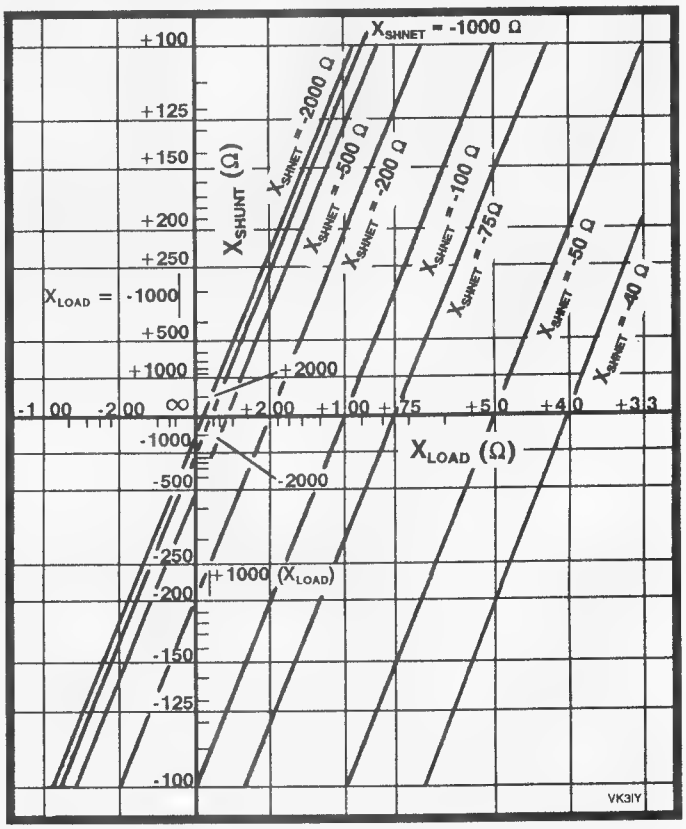


Fig 9 — Magnitude of circuit elements for high resistance output.

Left: Fig 8(b) — Equivalent parallel resistance and reactance for various values of Z². Note that defined areas refer to resistance, not reactance, values.





■ Technical

Technical Abstracts

*Gil Sones VK3AUI**

Cat Food Tin Filter

A cheap and simple filter which can notch out an amateur UHF or VHF signal appeared in *Radio Communications,* June 1993 issue, in the EMC column of Megan Smith G0MEG. The simple notch filter was built into a tin plate box made out of a cat food tin lid and the idea came from John G8MNY.

The filter is a simple series trap to notch out a 432 MHz band signal which was overloading a UHF TV tuner. The TV in the UK is mostly on UHF and in this case there was also a satellite system UHF output involved.

Similar overload can occur from 144 MHz and 50 MHz signals and a similar filter with the appropriate tuned circuit values would work.

The filter is shown in Fig 1. The box housing the filter was bent up from the lid of a cat food tin. The box measured 25 mm square and was 12.5 mm deep and was just a nice size for the components. The corners can be soldered and when completed the lid should be soldered on. A hole is left to adjust the trimmer.

The tuned circuit consists of a small trimmer and a 3 turn 6.3 mm diameter coil of 22 gauge wire. The coil is not extremely critical and either a 6 mm or a 1/4 inch diameter will do. The ferrite rings are used to suppress any signal on the outer of the coax. The coax is RG59 75 Ohm coax as this is a TV system.

To adjust the filter, connect it in the line to your transceiver temporarily and adjust the trimmer to notch out a received signal. This will give maximum attenuation in the amateur band.

For the 50 and 144 MHz bands a larger coil with more turns is required. The trimmer could be a 20 pF maximum type to give a suitable tuning range. Glue or silicone sealant can be used to hold the ferrites in place. The filter will work without the ferrites which are really just an added frill.

The finished filter should be painted or taped so as to make it look its best. Solder dags and the remnants of the label may not impress your neighbour. The contents of the tin will impress the cat, though, when it receives the extra meal.

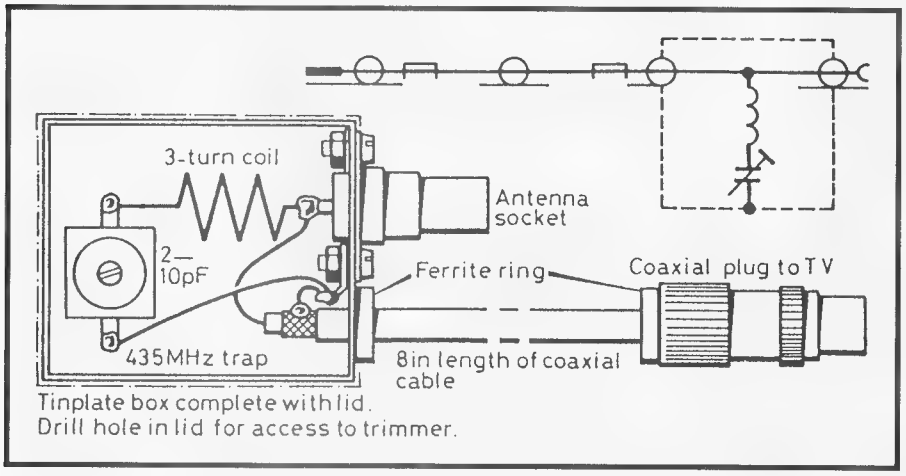


Fig 1. Cat Food Tin Filter.

Locked Out

A small item in the IREE Society publication *Monitor,* Vol 20, No 1 1995, came to my notice. The item was included in an account of a visit to the site of the Mt Wellington New NTA Broadcasting Tower. The new tower is being constructed on Mt Wellington overlooking Hobart and is by all accounts a significant project.

After the inspection, however, a car belonging to one of the participants suffered from EMC problems affecting the engine management and security system. The problem was that the system did not respond to the radio key. Resort to a manual disable key saved the day.

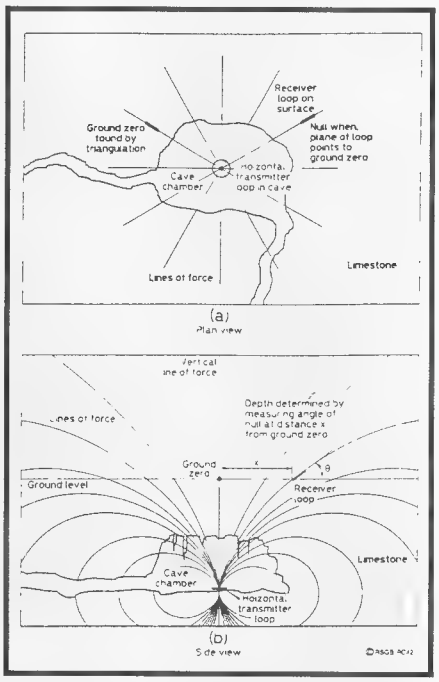


Fig 2. Plan View (a) and side elevation (b) of cave and magnetic lines of force.

Underground Radio

Some experiments with VLF induction radio systems for use in cave communication and radiolocation in caves have been published in *Radio Communications* for Jan 1995 by Mike Bedford G4AEE. A radiolocation system operating on 874 Hz was described which has been used to assist in mapping caves. Also mentioned was a two way communications system on 87 kHz.

The licensing situation in the UK is different from that here and, whilst this work has been carried out by amateurs, the operation is not in an amateur band. There is a possibility, though, if a VLF band were allocated here to carry out this sort of experimental work. The equipment

described was developed within the UK licensing arrangements.

The equipment operates in the near field and makes use of the magnetic field from a loop. The receive loop is used to find the point on the surface directly above the transmit loop which is laid out horizontally in the cave. This is by triangulation. Directly above the Tx loop at ground zero the vertical receive loop can be rotated without a signal being detected. The loop is in a no signal point.

The loop is then moved along a radial line from ground zero and the loop is tilted in the vertical plane to obtain a null. The distance from ground zero and the angle to which the loop is tilted can be used to calculate the depth of the transmitter. The plan view and side elevation of a cave are shown in Fig 2. Simple triangulation is not accurate enough as the lines of force are curved. However a suitable formula is given in the *Rad Com* article.

The 874 Hz transmitter is shown in Fig 3. A 3.579 MHz colour crystal is used with a 4060 IC divider to provide

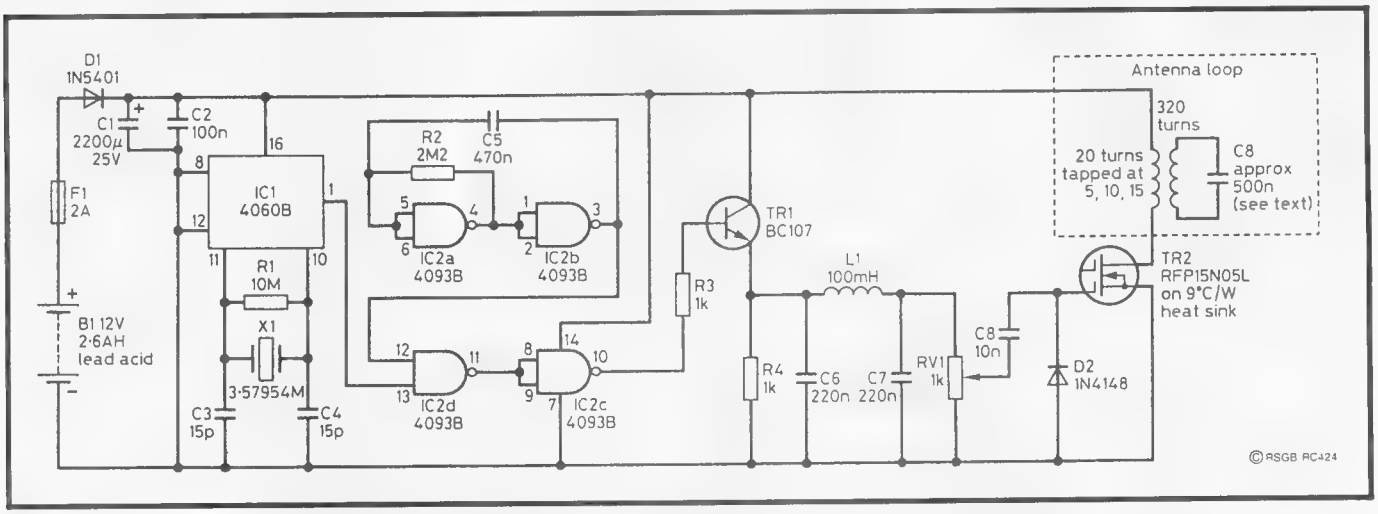


Fig 3. 874 Hz Radiolocation Transmitter.

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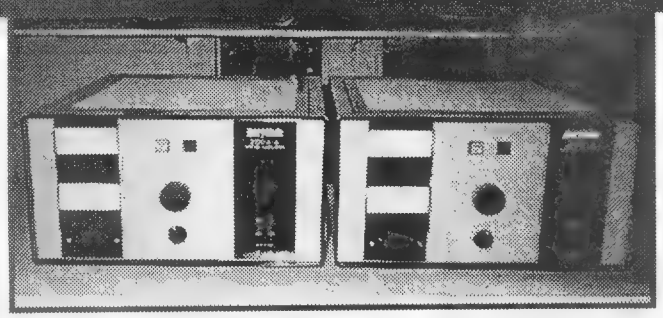

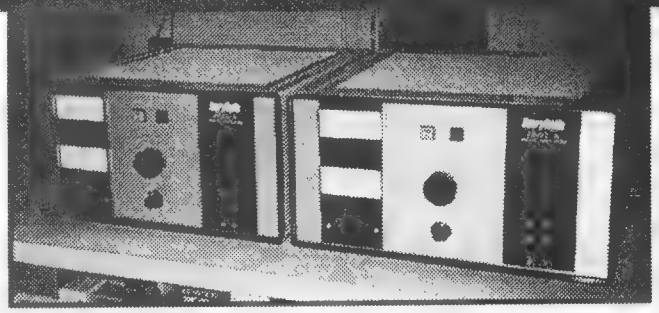

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a stable 874 Hz source. The 874 Hz is gated by a 1 Hz oscillator to identify the signal and help increase battery life due to the reduced duty cycle. The signal is filtered and used to drive the loop. The loop is 450 mm square and is wound with 320 turns of 7/0.2 mm PVC covered wire. The coupling coil is 20 turns of 16/0.2 mm PVC covered wire tapped at 5, 10 and 15 turns. The tuning capacitor is a series/parallel combination of small 1 kVw polypropylene capacitors adjusted for resonance.

The receive loop is similar but without the coupling loop. Back to back diodes are used to limit strong signals. The receiver circuit is shown in Fig 4. The loop is used with a Q Multiplier and the signal is then passed through a tuned amplifier to the output amplifier driving a pair of headphones.

The receiver is adjusted by setting RV1 so that the Q Multiplier is just short of ringing. RV2 adjusts the filter frequency and RV3 is adjusted similarly to RV1.

The equipment is mounted in waterproof boxes. The loops require protection from water and varnishing or potting are recommended.

The winding of the loops is quite a job as approximately 1 km of wire is used in the two loops.

A further article by the same author appeared in *Electronics World and Wireless World* for December 1994. This article, together with the *Rad Com* article, should be read by anyone needing further information. Additional references and sources are given in both articles.

A warning is also appropriate as caves can be dangerous places. Do not venture into caves without the appropriate equipment and knowledge. Seek out experienced cavers before venturing into a cave. Do not add your bones to those of the unwary.

The local licensing situation should be ascertained also. The situation here is no doubt different from that in the UK. The equipment is operating a long way from any amateur band and the licensing requirements would be very different.

*C/- PO Box 2175, Caulfield Junction VIC 3161

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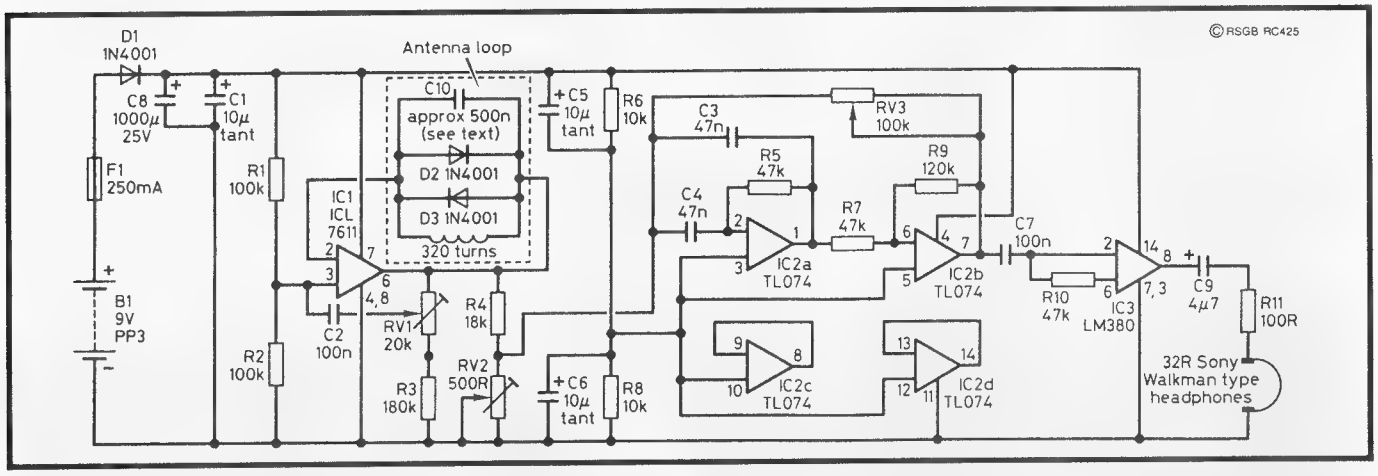

Fig 4. 874 Hz Radiolocation Receiver.

■ Operating

Amateur Radio Direction Finding (ARDF) Championships

Wally Watkins VK4DO

7th ARDF World Championships

(The following is taken from ARDF INFO, October 1994, IARU Region 1.)

The championships took place in Sweden on 17 September 1994. The organising society was SSA (Sveriges Sandare Amatorer) and the venue was the site of the 1st Royal Engineers' Regiment in Almnas, close to Sodertalje some 40 km SW of Stockholm. Preparatory work and performance of the championships was done in an excellent way by the Organising Committee under the skilled Chairmanship of P A Nordwaeger SM0BGU (Swedish member of ARDF Working Group and International Class ARDF Referee).

The championships were the biggest and most impressive ARDF event that has taken place. The following 26 amateur societies from IARU Regions 1 and 3 participated. Non-IARU participating societies are marked with asterisks.

BFRA	Bulgaria
CRC	Czech Republic
CRC RF *	Russia
CRAS	China
DARC	Germany
EDR	Denmark
FRS MR *	Moldavia
HRS	Croatia
JARL	Japan
KARL	Republic of Korea

LRMD	Lithuania
NRRL	Norway
NZART	New Zealand
PZK	Poland
REF	France
RSGB	United Kingdom
RSM	Macedonia
SARA	Slovakia
SRAL	Finland
SSA	Sweden
UARL	Ukraine
UBA	Belgium
USKA	Netherlands
WIA	Australia

The opening ceremony took place on Tuesday, 13 September afternoon. The SSA President, Commander of the 1st Royal Engineers and SP5HS addressed the 26 gathered ARDF teams and observers. The Chairman of the Organising Committee, SM0BGU, raised the IARU Region 1 Flag. The Swedish military bagpipe band in Scottish uniforms gave entertainment during the Ceremony.

The competitions took place on Wednesday, 14 (144 MHz) and Friday, 16 September (3.5 MHz). The terrain was perfectly chosen by the Organising Committee and fine location of the hidden transmitters (due to the concept of Siting Referee SM0OY) ensured the technical skill and experience of competing radio amateurs were in balance with simple physical ability.

The special event amateur radio station 8S0RDF operated in the Regiment during the championships. The free day program included a visit to Stockholm with the main attraction being the museum of the famous medieval warship *Vasa*.

Referees from Regions 1 and 3, were as follows:

Chairman	Krzysztof Slomczynski SP5HS
Secretary	Gunnar Ahl SM5CWV
Technical	Bo Lenender SM5CJW
Siting	Lars Nordgren SM0OY
Start	Ole Garpestad LA2RR
Finish	Karl-Heinz Mols DL9ME

TX 1 Referee: Hiroshi Izuta JF1RPZ
TX 2 Referee: In Young Jang HL1KPK
TX 3 Referee: Wally Watkins VK4DO
TX 4 Referee: Hans Endras HB9QH
TX 5 Referee: Max Wheatley ZL2MAX

The awarding ceremony took place on Friday, 16 September afternoon. Medals and certificates were awarded to individual and team winners of the first three places in each category on the VHF (144 MHz) and HF (3.5 MHz) bands. A Hamfest concluded this memorable amateur radio event.

2nd ARDF Region 3 Championships

Situations Vacant!

Expressions of interest are being sought from foxhunters to represent the WIA at the 2nd IARU Region 3 Amateur Radio Direction Finding championships to be held in Townsville between 15 and 20 July 1996. The WIA is the host society and it is essential to put together a full team to represent the WIA.

There are four classes, YL, Junior (under 19), Seniors (no age limit) and Old timers (over 40).

Skills required include:

- Technical skill — the ability to use a receiver, take bearings, estimate the distance to a transmitter and recognise a "good" bearing from reflections.
- Orienteering skill — the ability to use a map and compass, and find the best way from one transmitter to another.
- Physical skill — the ability to run fast.

A team is made up of three people and the two best individual times are taken as the team score in each classification.

Further information can be obtained from Wally VK4DO.

*PO Box 432, Proserpine, QLD 4800

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New Products

Last month I mentioned two new products, including the exciting IC-Z1 handheld with a detachable front panel that enables full control on the speaker/microphone section. Over the next couple of months quite a few other new products will be released. It is not possible to advertise them all immediately so if you are interested in a particular type of product give me a call.

Competition Winner

Congratulations to VK2QE, Allen Gillson, as the winner of the most interesting QSL card competition. The Icom Swiss Army Knife is in the post and if the card is any indication it will be of use.

Gosford Convention

Undoubtedly the largest convention I attend, it was again great to catch up with so many old friends, even a banana bender or two.

"...73"

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Product Review

Ham Log v.3.1 — An Australian Log Program Update

Reviewed by Evan Jarman VK3ANI

When this program was first reviewed in April 1994, it was version 2.41.

The program has been refined to incorporate some of the ideas of users. Some extra fields have been included. These improve the information available about a contact, from initial contact through to QSL confirmed. Also, the number of user defined default conditions has been increased. However, while changes have been made, this program has kept to its original goal. It remains easy to use and provides the information at the touch of a button.

Ham Log 3 maintains up to six separate log files. This was an innovation in the original version and was bound to become the benchmark of a good log keeping program. It has two methods for making log entries, normal and contest. Choice of log file is by menu and is set until changed. QSO entry is by pressing a key. A prompt is given for the callsign. When entered, the program then checks the country listing and displays the country. This includes the "out of country" callers, the ones with a /prefix at the end. It ignores portable and mobile suffixes. The program displays the country information including beam heading, local time and distance.

Quite often a screen of translations of a few phrases in the local language is available. A prompt alerts you if the station has been worked before, providing the details of the contact, even giving the name. The program assumes the frequency, mode and RST last used when entering stations in the log, so these parameters are changed only when changes are made in operation. You don't have to re-enter all the details for each contact.

There are positions for date and time which use the computer's clock (adjusted by the program to UTC) which the program enters, the commencement and conclusion time for the QSO being set by user defaults. A final touch is a text editor that displays any previous conversational text kept and it is unique to that station. All available at the touch of key if you want it.

An alternative is "contest mode" where only basic information is supplied. The only prompts are if the station has been previously worked, requiring an extra key stroke to abandon or continue with the contact. Using a separate log during a contest overcomes unnecessary duplicate contact prompts. One of the reasons for having multiple logs.

The only other information required is the received sequence number — the cursor starts there. The program automatically increments in sent sequence. Other fields assume the previous value so changes are required only when changes are made, but the option is always there.

Few key strokes are required. This reduces the time taken to keep a log, thereby increasing speed, which can only enhance contest operation.

Log programs, like any data base, are distinguished by their ability to deal with the information collected. **Ham Log 3** excels in this area. It can use any of the log fields as a key to locate, merge, extract or print records. Any of the records can be edited at a later date to correct data or confirm

QSL receipt. Each of the six logs can be merged into another when the reason for keeping them separate is no longer there.

A custom field has now been included in which a user tag can be inserted. These are 10 characters long and can be referenced by the program to merge, combine, extract or locate contacts. For example, a confirmed country can have a tag like "DXCC" placed in the custom field. By printing only those entries with the custom tag "DXCC", **Ham Log 3** provides that essential log extract needed with your application. There is the option of a default in the custom field enabling contacts to be similarly tagged as they are logged. The custom field can be modified, when the key is no longer necessary, on all records with that key. As each of the six logs has the capacity to store 99,999 contacts, a user defined key like the custom field can be invaluable.

Ham Log 3 has added some other extra fields to improve its QSL ability. QSL sent/received dates and an identifier for bureau or direct confirmation have been added. The program automatically inserts a sent date depending on the default options.

Also, the print options have been improved. As well as the normal formats, a new one has been added for customising the printing of QSLs. This enables **Ham Log 3** to provide printouts in a user defined format, suitable for another program or a special QSL card printer.

The program keeps a statistical tally of contacts and can display total contacts, countries and countries confirmed. These are broken down in totals in each mode. You are limited to two modes per log although there are 12 to choose from. I don't see the need for this limit.

The country list can be altered as changes are required. The program keeps country prefix listings on a time basis. This means a contact stays relevant to that country even though the prefix has been deleted or reassigned.

Utilities are provided to renumber, sort or repair the log data bases. These are used when backup logs are restored to realign linkages. One of the logs had to be deliberately altered to test these functions; they worked.

Finding the balance between the ease of entering data in a computer and retrieving useful information is not easy. **Ham Log 3** succeeds. It was designed around the requirements of the heavier log users as a working aid. That was obvious in the original version. Now the author has fine tuned a good program without losing sight of its objectives. This program has the features that many hours of experience deem necessary.

Ham Log 3 occupies 1.42 MBytes for the program plus extra space for the log files. A hard disk is essential. Operation is by keyboard. It requires 512 kBytes of memory to operate but needs 640 kBytes for all functions to work. It needs an IBM/C personal computer running MS-DOS 3.3 or later. The new version includes a PIF file for Windows devotees. The program has the usual F1 help screens and a manual is also included for clarification "if in doubt". The review copy came as a 720 kByte floppy Update disc with a manual and a 720 kByte Demonstration disc; it was version 3.11.

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SOME THINGS HAVE NO COMPARISON

amateur radio action

The magazine for the serious radio operator

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■ Operating

QRP — The Crest of the Radio Wave

*Dr Murray Lewis VK3EZM**

Any amateur operator who uses less than five watts output must be a masochist. Or so I believed before discovering QRP operating.

QRP, in the International Q code, is equivalent to "Reduce power". In current amateur terminology, however, QRP means low power operation, and is usually defined as a maximum of five watts output to the antenna. Power levels up to one watt output to the antenna, are regarded as QRPp.

So why would anyone want to use low power operating in this age of global communication systems via telephone, satellite television and computer networks? Maybe for the same reason anyone would operate an amateur station. Possibly it's the challenge of doing something different. Or perhaps for the thrill. But I can tell you there's nothing quite like having a QSO with a DX station while running less power than a single tail-light on my car.

Internationally, in amateur radio, interest is returning to low power operating, home construction of transmitters and receivers and, to some extent, CW transmission. In England about five thousand amateurs are members of the G-QRP Club — a number equivalent to approximately one-third of all Australian amateur licensees. Within the USA, the home of the kilowatt, the two largest QRP groups have a combined membership of over two thousand. And the Australian CW Operators QRP Club Inc has increased its membership to more than three hundred, at an average growth rate of eighteen percent a year over the last five years.

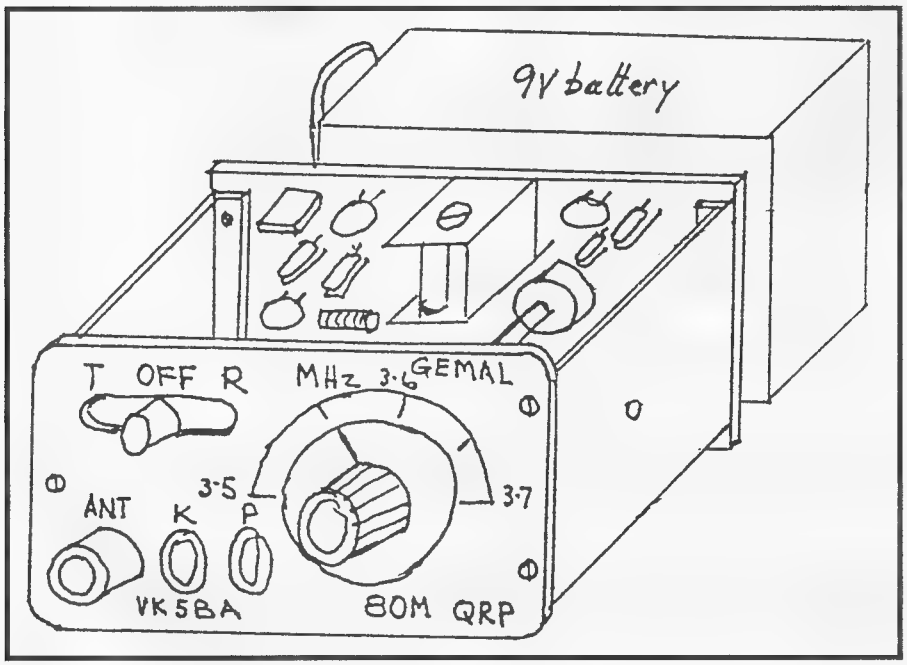


Fig 1 — Sketch of the Gemal 80 m QRP Transceiver, designed by Malcolm Haskard VK5BA. (Originally printed in "Lo-Key", Issue 21, page 1).

Operating QRP with inexpensive and home-built equipment, many radio amateurs find, yields a rare satisfaction and a chance to gain the ultimate in operating skill. DX chasing, contesting, packet, FM, SSB, repeater operating and experimentation are all within the QRPers areas of activity.

Not many amateurs can afford to buy a new transceiver. Few can hope to duplicate the latest HF rig on their workbench; indeed, few may even want to. However, working within the QRP guidelines of five watts, probably anyone with the ability to gain an amateur licence could build a transmitter, at least for CW. QRP transmitters are small, simple, and don't inflict pain in the hip pocket. Integrated circuits, low cost transistors, printed circuit boards, and all the other modern electronic wizardry have made home construction a breeze. Gone are the hazards of high voltage and current which lurked in the older rigs to bite the unwary. Most QRP equipment uses from six to twelve volts of battery power, or even solar cells.

To begin a QRP project there is no need to start from scratch and collect all the components yourself. Kits are readily available. If you have an interest in home construction, but have been too timid to warm the soldering iron, I'd suggest a QRP transmitter as a first project. There is a chance, of course, that you'd prefer to build a transceiver. Again, cheap and simple projects are available in kit form if you'd rather commence homebrewing this way. Be warned, though, if you are one of the many who build for use when away from the base station. All those bells and whistles which come with a commercial receiver make listening for weak signals easy, but it's difficult to reproduce them "in a matchbox". Simple receivers, though, are great fun to have when you are away on a holiday trip. That's no excuse of course, for not having filters; but maybe they are not necessary all of the time. Isn't that what you find with your normal receiver? Jim Rowe was correct when he stated in a recent

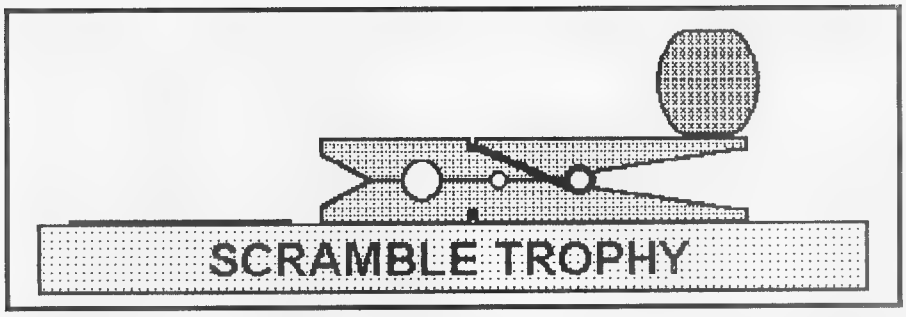


Fig 2 — Sketch of the Clothespeg Key Trophy made by Steve Mahony VK5AIM, for QRP CW "Scramble" Contest Winners. (Originally printed in "Lo-Key", Issue 36, page 25).

Electronics Australia (Oct '93) article, "The best way to learn how a radio receiver works is to build one yourself".

You'll need a suitable antenna for your QRP rig too. Don't be fooled into thinking that with low power, simple transmitters and receivers, the QRP antenna can be small and simple. With just a few watts of RF power, you need to make sure your feedline and antenna losses are minimal.

Preservation of every milliwatt is critical. So, if possible, get that antenna up high and clear, with the best feeder you can arrange. Even so, some QRPers are forced to use a less than desirable vertical or indoor antenna. And you'll find that while on holiday a low dipole or long-wire, held by a friendly tree, will still bring in plenty of signals and QSO's.

For those who are keen on home-made equipment, several books are available. Scan the WIA Bookshop list, published each month in *Amateur Radio* magazine, or Daycom's latest catalogue. The "QRP Notebook", the "G-QRP Circuit Handbook", "QRP Classics" and "Solid State Design for the Radio Amateur" are four titles which form the library backbone for the homebrew enthusiast.

"Lo-Key", an informative quarterly technical publication, edited by Don VK5AIL, is available to members of the Australian CW Operators" QRP Club. To join the club, which has radio kits and components available, send your details and $10 annual subscription to Kevin Zietz VK5AKZ, 41 Tobruk Ave, St Marys, South Australia 5042. The club also circulates "Boomerang Circuit Books", which are packed with enough ideas to burn out several soldering irons. Some of the most popular projects built by QRPers are from the pen of Drew Diamond VK3XU, a CW Ops Club member who has published details of several low power transceivers in past issues of *Amateur Radio* magazine.

Suppose, though, you'd like to try QRP without building your own equipment. That's easy, just turn down the power on your commercial rig. Many of the modern transceivers have an external ALC socket and, with an appropriate input to this line, power levels can be reduced to 5 watts or less without "lifting the lid". Other transceivers can be temporarily modified too. This gives the best of both worlds, all the advantages of a modern receiver and transmitter, but operating within the QRP guidelines. It's a good way to start operating, although homebrewing is better!

Operating QRP means that skills need to be honed. With just a few watts of signal you must perfect your operating technique, especially if you are going to work that DX station before the next high power station collects it. For QRP to QRP contacts there are some calling frequencies in common use, eg 3530, 7030, 14060, 21060, and 28060 kHz. QRP operating is the amateur operator's equivalent of "brains over brawn". You must be able to find DX stations, know when various bands will be open and have a crisp and clear setup on SSB and CW. Waiting for the right moment to make your move is essential when operating QRP. You must be alert and listening rather than transmitting. Perhaps the primary skill QRP

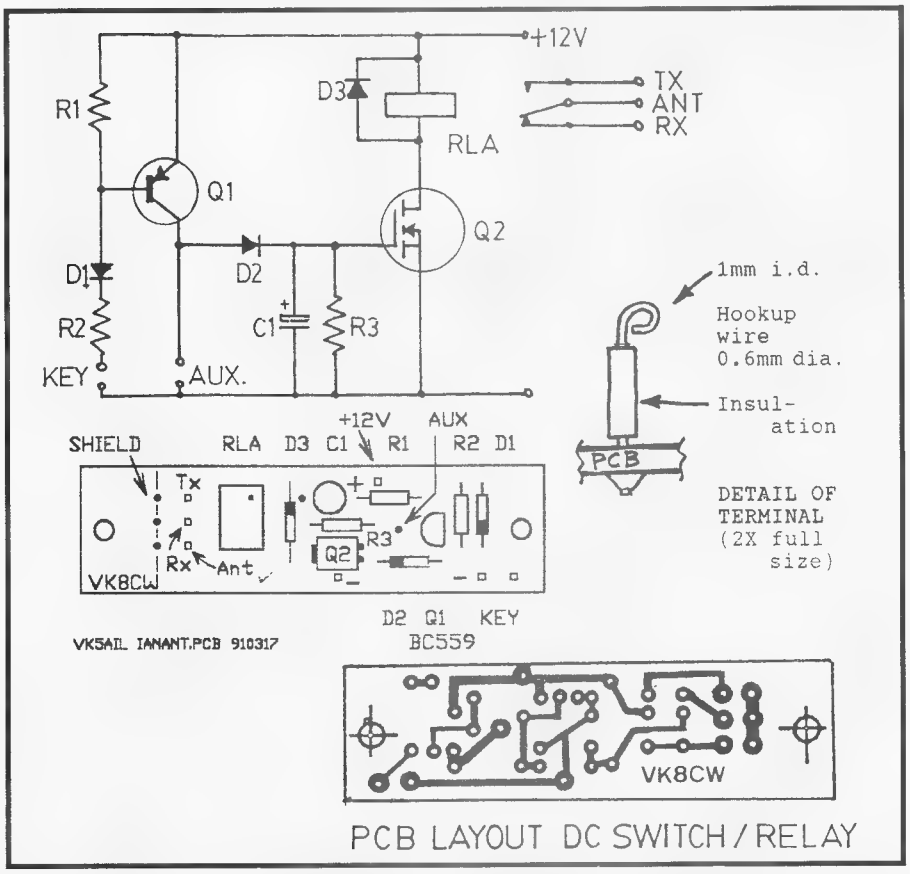


Fig 3 — Circuit and pcb layout for an antenna change-over relay, designed by Ian Smith VK8CW. (Originally printed in "Lo-Key", Issue 29, page 27).

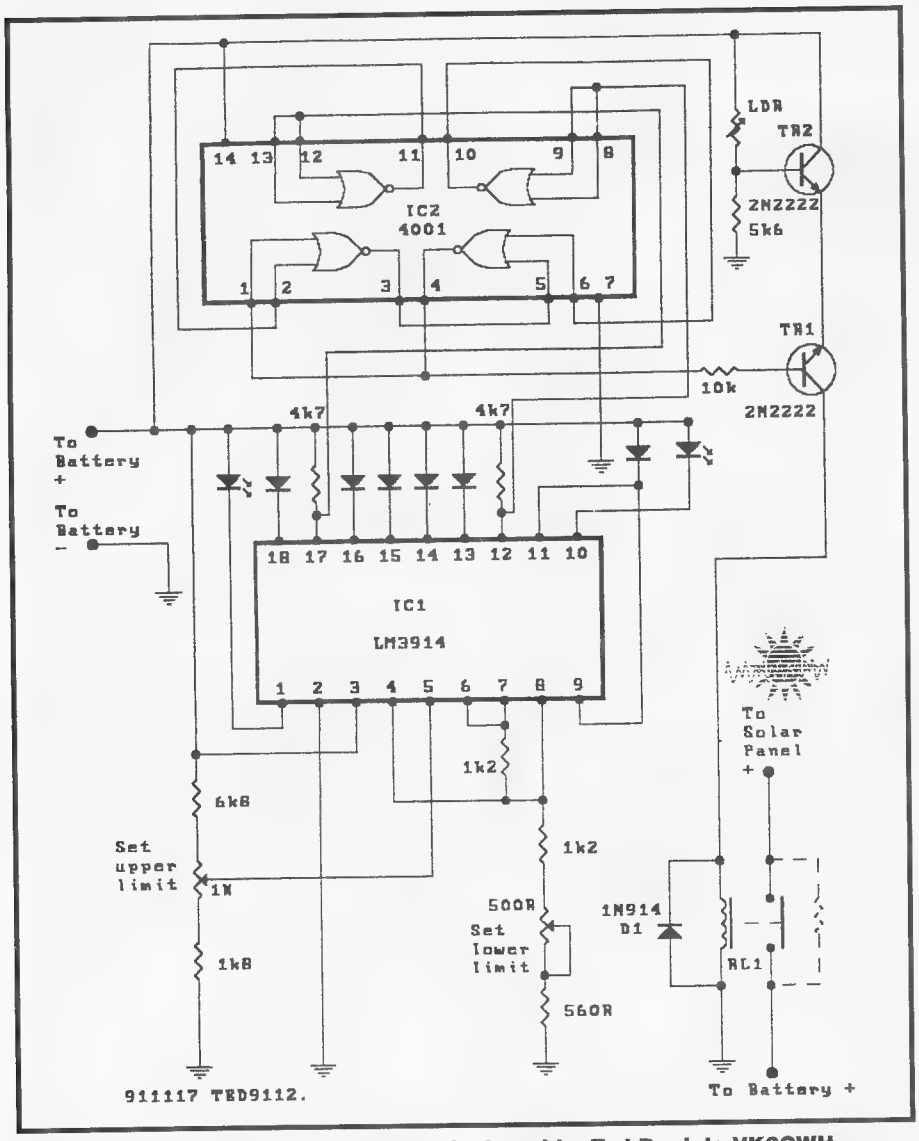


Fig 4 — A solar power supply circuit designed by Ted Daniels VK2CWH. ***(Originally printed in "Lo-Key", Issue 32, page 7).***

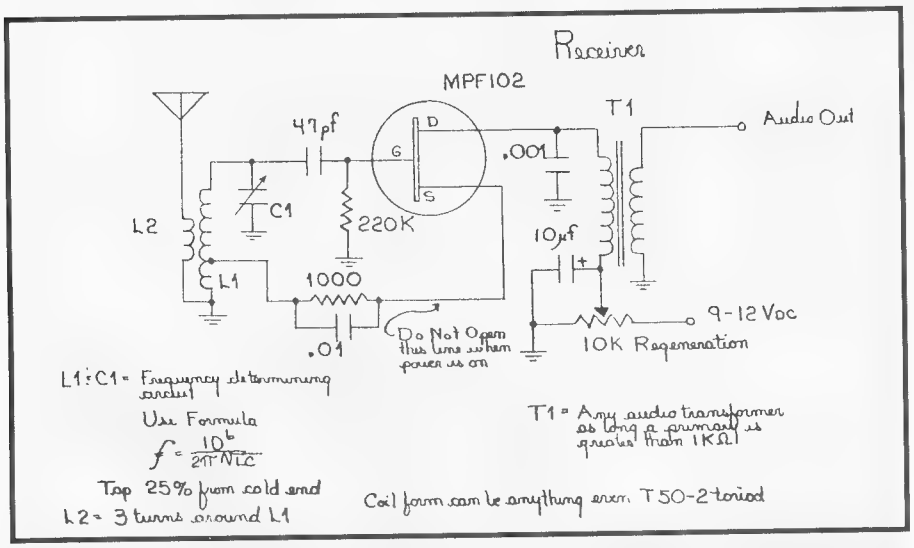


Fig 5 — Regenerative receiver designed by Ric Lucas WB0NQM. (Originally printed in "Lo-Key", Issue 26, page 17).

operation strengthens is patience. All it takes is patience, practice and listening, listening, listening.

Some QRPers only communicate with a combination of QRP power levels, CW and homebrewed gear. To be honest, though, few QRP operators use low power transmission, or CW, all of the time. This can lead to some amusing stories. One incident followed a recent Friday evening "natter net", a time when Australian club members operate on SSB at "high" power (perhaps up to fifty watts) to swap technical ideas and news items. As the net finished, a club member changed frequency, and heard the end of a contact between two other operators. "Just a few kHz down", said one old-timer, "are a group who claim to be low power CW operators. They're not using CW though, just talking about it".

QRP operating can yield amusing moments also. A VK3 club member related how one QRP/QRO contact with a VK2 ended rather abruptly after he stated he was using less than three watts output with an ICOM 735. "Who would do that?", the VK2 demanded, "A madman or a masochist?"

There was a time when I thought the same. But why not give QRP a try? Maybe I'll see you around 3530 kHz sometime.

Acknowledgement

Thanks to Don VK5AIL, for providing information and illustrations for this article.

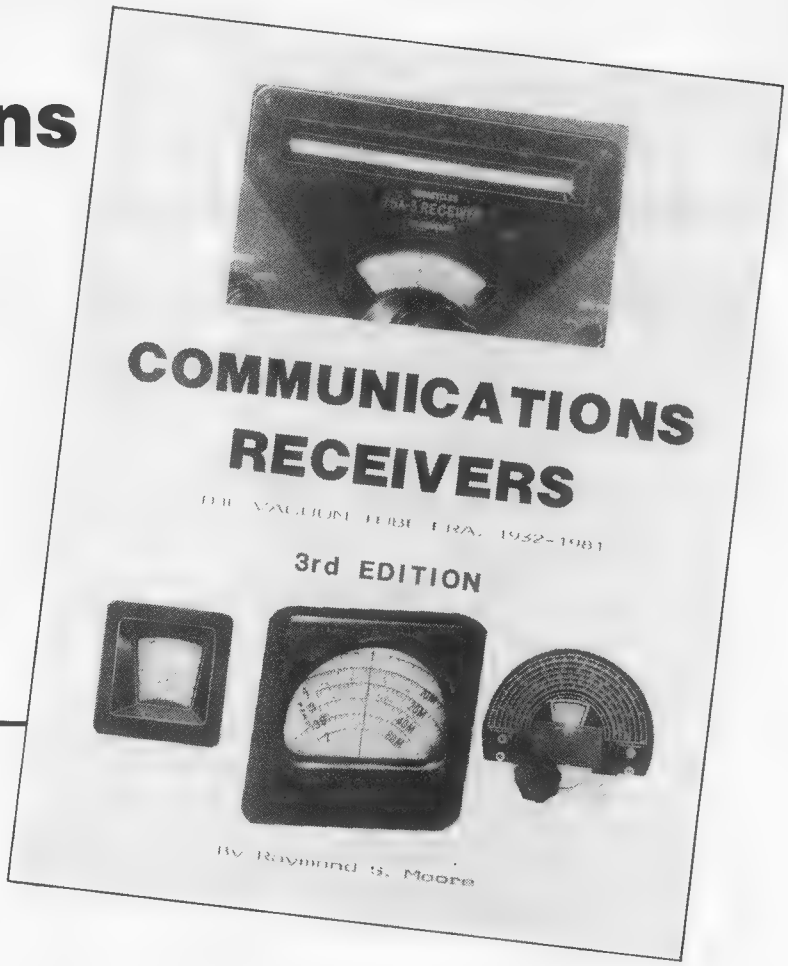
Murray Lewis is a senior staff member, in the Neurology section of a local university, and is involved in teaching and research. A keen short-wave listener while at school, he was first licensed as VK3JHX and, about two years ago, achieved his present "full call" licence. He has many publications, most within his teaching and research areas, but also fiction and articles of general interest. Other interests include travel, photography and making jewellery.

*7 Shalimar Court, Vermont South Vic 3133

■ Book Review

Communications Receivers The Vacuum Tube Era: 1932-1981. 3rd Edition

By Raymond S Moore.
Published by RSM Communications
Reviewed by Ron Fisher VK3OM



How come I missed out on editions one and two? This would have to be one of the most fascinating books I have read in years.

To the newcomer in amateur radio, it might seem strange that, in years gone by, we used separate transmitters and receivers. The transmitters were usually home made or modified war disposals equipment. Receivers were often home made also, but the lucky few who could obtain a factory built receiver were really looked up to. The most desirable receivers came out of the USA with names like Hallicrafters, Hammarlund, National and, somewhat later, the incomparable Collins.

Here in Australia it was often luck, more than money, that brought an elusive receiver into the shack. In the 1940s and 50s, US dollars were almost unobtainable and I could never work out just how some Australian amateurs were able to import the latest receivers.

This book tells the story of American communications receivers and, as far as I can see, lists just about every model ever produced. It also gives the history of all of those famous manufacturers which, in itself, is worth the price of the book.

The criteria used for inclusion in the book are;

1. Superheterodynes only.
2. Manufactured in the USA.
3. Offered for sale to radio amateurs and the general public or through surplus channels.
4. Must have a BFO.
5. Continuous tuning — excludes fixed tuned and switch tuned receivers.
6. Must cover all or part of the high frequency bands.
8. Advertised or promoted for communications use.

As you can see from this, you won't find the Australian produced receivers such as the AR7 and AR8 mentioned. Also missing are the popular English Eddystone receivers that were popular in Australia up to the late 1950s.

However, the author didn't quite stick to criterion number two. Several Lafayette receivers available through the 1960s were made in Japan. Most were available in Australia, also under the Lafayette brand, but were imported direct from Japan. The HE-30 was one of the better known models.

I also suspect that criterion number four is suspect in a few cases as no mention of a BFO tube or switching could be found. However, I must admit that I am nit picking. A tremendous amount of research has gone into the production of this book and, in general, the illustrations used are of very reasonable quality.

If you have ever used an American receiver you will find this book hard to put down. Most of the receivers described are now collector's items. I was lucky enough to have used over forty of them over the years and I wish I still had a few of them.

Our review copy came from Daycom but is possibly also available from your local Divisional Bookshop. The price is $45.

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ALARA

Sally Grattidge VK4SHE, ALARA Publicity Officer*

Vital Statistics

In January 1995 ALARA's total financial membership stood at 177. Of these 85 are Australian members, and 53 are Australian members affiliated with the WIA.

Some YL Nets

BYLARA Monday, 1945 local, 3.708 MHz. If not on this frequency, then somewhere between 3.680 and 3.710 MHz. Watch out for UK daylight saving.
BYLARA Wednesday, 1115 local, 7.050-7.090 MHz.
BYLARA Saturday, 1045 local, 7.050-7.090 MHz.
CLARA Tuesday, 1700z, 14.120 MHz.
Finnish Phone Sunday, time not known, 3.688-3.710 MHz.
Finnish CW Sunday, time not known, 3.533-3.522 MHz.
Italian Monday, 1400 UTC (Summer), 1300 UTC (Winter), 7.070 MHz.
European YLDX Thursday, 1800 BST, 14.242 MHz.
YLDX Monday, 0700 BST, 14.222 MHz.

Did You Know?

WARO uses the figure of Pania as its emblem. An old Maori legend tells how Pania heard the voices of the sea people and swam out to meet them. However, she was unable to return to her lover on the shore and was transformed into the reef which now lies beyond the breakwater at Napier.

When it came to designing a badge for WARO the figure proved to be too complex, so a flower, Ranunculus Lyallii, the Giant Mountain Buttercup, was chosen. This magnificent alpine plant has tall branched flowering stems, usually with many large white flowers, each with numerous overlapping petals, and is found in the southern alpine regions of the South Island and the highest peaks of Stewart Island. The almost circular leaves can be up to 40 cm across, and the central hollow where the stalk is attached can be deep enough to hold a cup of water. The flower can be five to eight cm in diameter, with white petals surrounding golden stamens and a centre of overlapping greenish pistils. It is the largest and finest ranunculus in the world. *(From WARO Newsletter).*

Learning the Code — Has anything changed since Mrs Mac?

Florence McKenzie OBE was a remarkable person. She was Australia's first woman to qualify as an Electrical Engineer, the first licensed woman amateur radio operator as VK2FV, and the first woman member of the WIA. ALARA remembers her each year during the ALARA Contest, where the Florence McKenzie Trophy is offered to the Novice with the highest CW score. This way Mrs Mac continues to encourage operators to use CW just as she did in the 1940s when she and her team trained between 10,000 and 12,000 telegraphists for wartime operation.

22 WPM was the speed required to be accepted into the WRANS with, of course, absolute accuracy, and all this without a computer or iambic keyer in sight. Monumental changes have taken place in the equipment used for communication, but the human brain has not altered much in what evolution would regard as a very short space of time, so maybe we can learn something from Mrs Mac's teaching methods.

"Learning the alphabet always frightens beginners, but it can be done one character at a time "singing" it to yourself at odd moments through the day. You can sing aloud if you wish, but this is best done in the privacy of your own home. Each letter must have a distinctive rhythm and not be heard as separate dits and dahs. This way you learn to recognise a character sent at around 20 WPM, although you will need long spaces between characters until your brain knows them without conscious translating. For longer characters it sometimes helps to invent a short phrase to help you remember, for example "L" "D'dah d'dit" — "To hell with it".

Once a few characters have been memorised, you can start "reading" in code as you go about your day looking at posters, street signs, number plates, and so on. Rhythm is the key to success with spaces between the characters and words being as important as the characters themselves.

Learn to receive before you try sending. Those rhythms must be imprinted on the brain before you attempt to use the key. Mrs Mac used her students as instructors. When they reached a certain speed, they would practice their sending by sending at a slower speed to beginners.

Most people reach a "plateau" around 12 WPM. Those who suffered this condition were instructed to attempt to copy much higher speeds (22 WPM) and just keep trying even though they missed most of it. Short well-used words like "the" and "and" are recognised first. Eventually words are recognised as a single unit, not broken into separate letters."

The above information was found in an article in *Amateur Radio Action* by Moira Millgate VK8NSW who was one of Mrs Mac's pupils but, if you are trying to learn the code today, I am sure you will find the instructions familiar.

We'll Meet Again? VK4 YLMEET, BUNDABERG, September 1994.
L to R: Back row — Ann VK4ANN, Pat VK4PT, Lorna, Robyn VK4RL, Julie VK4JJB, Mary VK4PZ.
Front row — Val VK4VR, Joycelin VK4JJ, Margaret VK4AOE, Sally VK4SHE, Bev VK4NBC.

North Queensland Convention

Dates have now been set for the North Queensland Convention in Townsville, so mark your calendar for 15, 16 and 17

September 1995. Although not officially a YL meet, activities are organised for the ladies and it is a good opportunity to get together again and meet some YLs from other states as this popular convention is usually well attended. There will be the usual YL home brew, and why not amaze the OMs by putting something in their section too. ALARA will be represented with a small display and a chance to meet the local members.

Townsville Ladies Net

On 8 February this year the Townsville Ladies Net was six years old. The net is on the local 2 m repeater (146.700) on Wednesdays at 6 pm local time and visiting YLs are very welcome to call in. The net is run by Ann VK4MUM, who started it in 1989. Recent regular callers are Dawn, Sally VK4SHE and Pat VK4MUY.

Welcome to New Members

Edward VK7NET joined 1 February 1995. Edward is a "wheelie", and has been licensed since June 1994. OMs cannot be full ALARA members but are very welcome to subscribe to the Newsletter. Also, Lynda G0VDR joined on 7 February 1995, sponsored by Marilyn VK3DMS.

C/o PO Woodstock, QLD 4816

WIA News

Cable TV — Questions Over EMC

The roll-out of cable television around Australia is well under way.

By the end of January, the Telstra Pay TV cable network had passed 100,000 homes Australia-wide, reaching its 50,000th home in Sydney alone in mid-February. Telstra (the operator of Telecom Australia) is on target to reach 400,000 homes mid-year and plans to pass one million homes each year from the end of this year.

They have been laying aluminium "hard line" cable under the streets since June last year. Philips Electronics Australia has been supplying Telstra with cable imported from Times Fibre of the US

In October last year, Telstra began a doubling of their roll-out and expects to reach 400,000 homes by mid-year, and plans to pass one million homes each year from the end of this year for the next four years.

Now, Optus Vision has joined the cable Pay TV bandwagon, having resolved its differences with the Minister for Communications, Michael Lee, over the issue of monopolising access which brought their plans to a halt late last year.

Optus began installing "hybrid" cable — comprising aluminium hardline coax and optical fibre — in Sydney's western suburbs in late February, slinging the cable between streetside power poles. The optical fibre part of the cable is to be for Optus' subscriber telephone system to compete with Telecom's.

In an agreement announced late in January, Melbourne cable manufacturer, Olex Cables, part of the Pacific Dunlop group, will establish a factory in Tottenham to make hardline coax for both cable TV carriers. Electronics giant, Philips Electronics Australia, has said they are preparing business plans for local manufacture of other key items, including the underground amplifiers which are distributed along the cable. These have been imported up to now.

The cable pay TV system employs radiofrequency transmission down the coax, between the service providers and the subscribers in their homes. However, the specifications for the cable transmission systems are not yet settled, according to an Austel spokesman. Each supplier will likely have different transmission systems, although Austel are favouring "open" standards to avoid system monopolies.

One proposed system employs two spectrum segments: 5-65 MHz, for encoding and subscriber control, and 85-550 MHz, for the television channel transmissions themselves. A higher UHF band is "reserved" for future multimedia interactive systems.

The free-to-air television services don't want their channels used on cable systems and the Federation of Australian Commercial Television Stations (FACTS) have proposed that cable service providers use spectrum in the 230-520 MHz ahd 820-950 MHz ranges.

There is some confusion over standards at present and an Austel committee is working towards developing a set of standards, but they're a moving target, Austel's spokesman said, and, while Australia is basically modelling its approach on European standards, we're breaking fresh ground. Settling of standards is unlikely to occur within 12 months, but that may be accelerated in the future depending on prevailing circumstances within the industry.

Clearly, there's potential for electromagnetic compatibility problems between cable TV installations and amateur radio operation. The potential for amateur transmissions to possibly interfere with cable installations — either streetside equipment, set-top equipment in subscribers' homes or to the link from streetside to set-top — is at present unknown. Likewise, the potential for interference to amateur radio receivers from the subscriber "back channel" is unknown, and where and how problems might arise.

Austel's spokesman said EMC considerations are to play a big part in pay TV standards and Austel is wanting to have an urgent look at that as there is a gap there at present.

The WIA is monitoring the situation and is to seek input on the EMC question to the relevant organisations.

AMSAT Australia

*Bill Magnusson VK3JT**

National co-ordinator
Graham Ratcliff VK5AGR. Packet: VK5AGR@VK5WI
AMSAT Australia net: Control station VK5AGR
Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions): Primary 7.064 MHz (usually during summer). Secondary 3.685 MHz (usually during winter). Frequencies +/– 5 kHz for QRM.

AMSAT Australia newsletter and software service
The newsletter is published monthly by Graham VK5AGR. Subscription is $30 for Australia, $35 for New Zealand and $40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:
AMSAT Australia, GPO Box 2141, Adelaide SA 5001

MIR Operations Return to Normal

It seems that all has returned to normal on MIR after quite a long period when activity has been interrupted by high workloads and other problems. Reports indicate that the packet PMS is working and the cosmonauts have been enjoying leisure time voice contacts. The recent MIR/STS rendezvous went (almost) according to plan and we can look forward to the real thing later in the year. Viewing conditions were not good and I didn't see the two spacecraft flying together. Did you?

Finding Phase 3d Will Be Easy

You will be aware of the confusion regarding the tracking of RS-15. Evidently this was caused by the explosion of the spent third stage of the rocket which peppered the orbit path with debris. Phase 3d will have a GPS receiver on board. This will enable the satellite computer to calculate its own keplerian elements and it is anticipated these will be broadcast as part of the telemetry stream.

RS-15 Suffers Eclipses

If you have been having problems with RS-15 it may have been due to the satellite being in eclipse. Reports indicate that the transponder has been failing due to low battery voltage during recent eclipses. The battery voltage has been monitored as low as 12 volts instead of the normal 17 volts. When it falls to about 14 volts the transponder becomes intermittent. The orbit of RS-15 will take it alternately into periods of full sunshine and eclipse. The only way to tell for sure is to monitor the telemetry.

Two New OSCARs

The launching of TECHSAT-1 was due to take place on 28 March from Plesetsk, Russia, about 700 km north of Moscow. The orbit is circular and not sun synchronised. The satellite is three axis stabilised, and will be earth pointing.

MADE IN AUSTRALIA
New
HF LINEAR AMPLIFIER
EMTRON
THE "POWERHOUSE" DX-2

Be on top of the pile!
- Specially developed by EMTRON for those HAMS who demand quality and performance at a competitive price.
- Revolutionary new monitoring and display unit for Pout, Prev, Ep, Ip, Ig2, Fault, Ready & TX on.
- This power house will handle all the rigours of contest, DXing and high duty cycle emissions.
- EMTRON DX-2 is built to well known Emtronics standards for quality, reliability performance and price. We challenge you to compare these features of EMTRON DX-2 with any other amplifier.
- IN PRICE AND FEATURES THE EMTRON DX-2 HAS NO COMPETITION!
- Buy from EMTRONICS (factory direct - no middle man's markup), and become a "TOP GUN".
- ORDER NOW! DELIVERY 6 TO 8 WEEKS.

Specifications:
- FREQ. RANGE: All HF amateur bands 1.8- 29.7 MHz
- MODES: SSB, CW, AM, RTTY, SSTV
- POWER OUTPUT: 150 watts PEP, CW or continuous carrier.
- DRIVE POWER: 40 to 60 watts
- INPUT SWR: Better than 1.3 : 1
- ALC: Negative going, rear panel adjustment
- HARMONIC OUTPUT: [illegible] below rated output
- INTERMODULATION DISTORTION: [illegible] or better below rated output.
- FAULT PROTECTION: [illegible] temperature sensor
- COOLING: Full cabinet ducted-air, temperature controlled two speed blower motor, pressurised forced air chassis.
- TUBES: 2x4CX800A/GU74B ceramic tetrodes designed and built for military use.

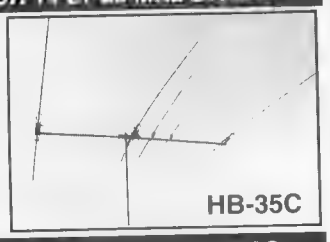
TET-EMTRON ANTENNA SYSTEMS

SAVE $59 Free Collins 1:1 balun worth $59, comes now with every TET-EMTRON beam antenna!

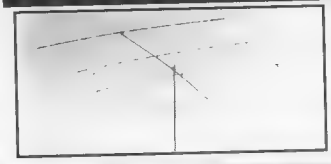
DUE TO SHARP INCREASE IN WORLD ALUMINIUM PRICES, WE WILL NOT BE ABLE TO HOLD OUR PRICES MUCH LONGER. BUY YOUR ANTENNA NOW, OR IT WILL BE TOO LATE!

THREE BAND BEAMS FOR 14-21-28 MHz BANDS

TE-13 rotatable dipole $199
TE-23 2-element beam.....$414
TE-23M 2-ele. mini-beam.....$440
TE-33 3-element beam.....$575
TE-43 4-element beam.....$750
HB-35C 5-element trapless beam $770



FOUR BAND BEAMS FOR 7-14-21-28 MHz BANDS



TE-14 rotatable dipole.....$275
TE-34 3-ele beam on 14-21-28MHz, 1-ele on 7MHz.....$695
TE-44 4-ele beam on 14-21-28MHz, 1-ele on 7MHz.....$870

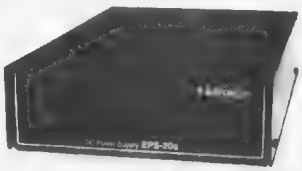
New EMTRON switching mode power supply

This is the power supply specially designed for your ham radio transceiver!

ONLY $295

EPS-20s

Specifications:
Input: 240 VAC +/- 15%, 50 or 60 Hz
110 VAC +/- 15% 50 or 60 Hz
Output: 13.8 VDC (nominal) 20 A peak
Regulation: +/- 0.25V at nominal mains
Ripple: less than 25 mV peak at 15A
Size: 60mm x 185mm x 300mm



Pre-launch keplerian elements

Satellite:	TECHSAT-1	
Catalogue number:		
Epoch time:	95087.37500000	(Separation)
Element set:	001	
Inclination:	075.3991 deg	
RA of node:	328.7324 deg	
Eccentricity:	0.0015304	
Arg of perigee:	101.9385 deg	
Mean anomaly:	355.9607 deg	
Mean motion:	14.7000703 rev/day	
Decay rate:	0 rev/day^2	
Epoch rev:	0	

Frequencies

2 m uplink	23 cm uplink	70 cm downlink
145.850	1269.700	435.225
145.890	1269.800	435.325
145.910	1269.900	
145.930	1269.950	

Modes of Operation
9600 bps MSK or 1200 bps PSK.

Suitable TNC or MODEM
G3RUH or compatible for 9600 bps
FUJI or PACSAT for 1200 bps.

This launch will also carry the Mexican microsat UNAMSAT-1 constructed at the University of Mexico by a team headed by David XE1TU. Details as they come to hand.

More FAQs (Frequently Asked Questions)

FAQ. Where can I get keps for the Sun/Moon?

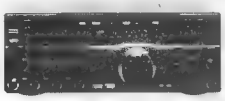
This is a very common question. It comes up often on packet and other media. The questioner seldom gives a reason for the request so it's not an easy one to answer. The Sun is not too difficult and the "keps" are well known. They are included in many tracking programs. If you consider the Earth to be stationary and the Sun to orbit around it, a more or less normal set of keplerian elements will work in amateur tracking programs and the results will be quite accurate. The keps should not need updating for a century or two! The Moon is different, however. Its orbit is affected by the Earth and the Sun. It is a "three body problem" and it requires a three body solution. Our tracking programs will not do a very good job even if presented with a so called "good" set of keps. Some programs can be modified to give a close approximation but it is complicated. Astronomy programs use algorithms that take all the variables into account. The best answer then is to get hold of either an EME tracking program or an astronomy program if you are serious about tracking the Sun or the Moon. I would not recommend putting keps for the Sun or Moon into a program that did not already have them in the satellite file.

FAQ. What does mode "X" mean?

For "X" substitute just about anything. This is a confusing one for newcomers. A bit of history. OSCAR-6 carried the first amateur radio transponder into space. It

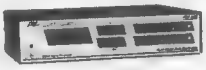
KENWOOD & ICOM
Best prices from EMTRONICS

JRC
JST-145/245
HF/HF+50MHz transceiver
Complete with BUILD-IN SWITCHING POWER SUPPLY, AUTOMATIC ANT. TUNER, POWER MOSFET SEPPS SYSTEM and features that only a six page colour brochure can describe!

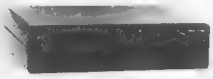


STANDARD
C1208D
A full featured 2m rig that fits anywhere, yet puts out a full 50 watts as well-- that's STANDARDS new C1208D! Super wide RX range, 100 memories, stores freq., offset & CTCSS tones and many other features!

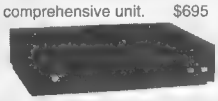
DIGITAL COMM.
AEA DATA CONTROLLERS
represent the most exciting value in amateur radio today.
DSP/MULTI MODE DATA CONTROLLERS. The internal software provides all popular digital amateur data modes. Unique LCD read-out on the DSP-2232 displays the mode and diagnostics for both channels.
DSP-1232 $1495 DSP-2232 $1895



PK-900: THE STEPPING STONE BETWEEN '223MBX & DSP-2232
With features borrowed from the '2232', plus unique additions: dual simultaneous ports, software selectable modems, 9600 baud modem & PACTOR, etc. $1250



PK-232MBX: MULTI-MODE DATA CONTROLLER.
PK-232MBX, the world's leading multi-mode controller combines all amateur data communication modes in one comprehensive unit. $695



New PK96 HIGH SPEEDPACKET CONTROLLER $499
Tired of waiting for packet data? Wish for an easy solution? Now there is one: The PK-96, a low cost, high-speed, single-mode data controller.

New PK-12
PK-12 a Pint-Sized PACKET CONTROLLER that delivers Full-Sized performance. PK-12 is a 1200 baud VHF packet controller, ideal for just getting started in packet. * Gateway as a Node * Full-featured mail facilities * AEA's HOST mode * KISS - Persistance * Slottime!
$ 295

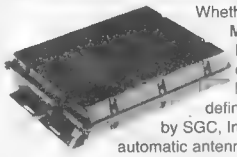
PC-Pakratt for windows
PC-PAKRATT for Windows makes control of your AEA Data Controller easier and more enjoyable! $250

AEA SWR-121
PRO. ANTENNA ANALIZER
It shows a precise display of SWR curve, independent of the feedline. With optional software you can save plots on disk and control from your computers keyboard. The SWR-121 is a highly desirable instrument in any RF laboratory, indispensible in design of RF transformers, RF matching networks and can be used as a accurate GDO. In the right hands the SWR-121 is a miracle! Available for HF & VHF/UHF band.

SWR-121(VHF/UHF) $859
SWR-121(HF) $ 795

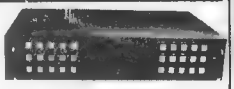
Satellite Antenna Rotator
KR5400
Dual Azimuth / Elevation Rotator for Satellite tracking. Capable of Computer control! $1350

The SG-230 Smartuner



Whether you are a **HAM, LAND MOBILE, MARINE or AIR BAND** operator, you need a efficient antenna coupler. The best on the market today is definitely the SG-230 made in USA by SGC, Inc. The SG-230 is a fully automatic antenna tuner, with locking feature, where a computer system continuously monitors all antenna parameters and instantly selects the right values from more than half a million combinations in its matching circuit to make sure everything is perfectly tuned. With 500 position non-volatile memory build in, and a memory management program, there is only one word for **SG-230 HF AUTOMATIC ANTENNA COUPLER - RELIABILITY !** PRICE $795

UNIVERSAL M-8000v5



More sophistication and power than ever before. Modes include Morse, Baudot, Bit Inverted Baudot, Variable Baudot, ASCII, Paket, Pactor, Sitor A , Sitor B, ARQ 2 &4 (TDM), ARQ-E, ARQ-E3, ARQ 6-90, FEC-A, FEC-S, ARQ-S, SWED-ARQ, VFT (FDM), Piccolo, Possag, Golay, ASARS and breath-taking FAX. Also will display to screen: Russian Cyrillic, Literal mode and Databit mode. Automatic and variable shift. Auto speed readout and auto tuning. Selcals, MSI, USO, diversity reception, level control, dual tuning indicators, memories and more. Serial and parallel print ports and VGA color monitor output Many more features! $2995

New Satellite Tracking
AEA ST-1
Satellite tracker to control your KENPRO - 5400/5600 Antenna Rotator $775

Weather FAX In Colour
AEA FAX III
Tired of waiting for Weather Reports on Television. Buy AEA FAX III. $275

EMTRONICS
SYDNEY & HEAD OFFICE
94 Wentworth Ave.
SYDNEY 2000
Ph (02) 211 0988
Fax (02) 281 1508

listened for signals in the two metre band and re-transmitted them in the 10 metre band. No problem there but when OSCAR-7 went up it carried two transponders so a means of differentiating between them was required. One operated in the same bands as OSCAR-6 so it was called mode "A". The new one was designated mode "B".

As new transponders have flown on the OSCARs they have been given mode designations to indicate to users where to listen and transmit and to give an idea of the equipment required to work them. Over the years this has become quite complex and with the launch of phase 3d we will see a new method of mode designation in operation.

It will be a two letter system indicating the uplink and downlink bands of operation. It should simplify things considerably. In the meantime the following modes are in operation on various OSCARs (see January or July *Amateur Radio* for exact frequencies).

Mode	Uplink	Downlink
"A"	2 m	10 m
"B"	70 cm	2 m
"J"	2 m	70 cm
"L"	23 cm	70 cm
"S"	70 cm	13 cm
"K"	15 m	10 m

FAQ. What is circular polarisation?

Most antennas are either horizontally polarised or vertically polarised and all amateurs should know what that means. Satellite spin or tumble and the passage of the signal through the ionosphere mean that the user has no way of knowing the polarisation of the incoming signal at any instant. For this reason most satellite antennas are circularly polarised and, to take advantage of this, you should use similar polarisation at your station.

You will see symbols like RHCP and LHCP to denote Right or Left Hand Circular Polarisation. Circular polarisation produces a signal with a rotating wavefront. You can imagine this by visualising an antenna spinning on its axis as it transmits. This would be quite difficult to do physically but it is a simple matter to produce a spinning wavefront electrically. The helix antenna produces such an effect naturally without any help at all. Helixes make excellent satellite antennas but are difficult to construct and are cumbersome at VHF.

Most circularly polarised antennas used by amateurs are dipoles or Yagis. To produce a circularly polarised wavefront from a Yagi it is necessary to build two and mount them at right angles. They can share the same boom (crossed Yagi) or be entirely separate entities. They need to be fed 90 degrees out of phase to produce circular polarisation. This is done by using a 90 degree delay line between the feed points and feeding power to one antenna. The hand of polarisation, ie RHCP or LHCP, can be changed by reversing the feed connections to one antenna. This can be relay controlled to allow changing polarisation from the operating position.

This arrangement produces a wavefront which is spinning at the frequency of operation. 145.9 million revolutions per second on two metres! Quite hard to do mechanically! There is a very heavy penalty to pay for getting the hand of polarisation wrong. Some texts put it as high as 30 dB so you had better get it right. A switch or relay is not a bad idea.

Next Month

SUNSAT: A Micro Satellite Under Construction In South Africa.

**359 Williamstown Rd, Yarraville VIC 3013*
Packet: VK3JT@VK3BBS.#MEL.VIC.AUS.OC
CompuServe: 100352,3065

BT

AWARDS

*John Kelleher VK3DP — Federal Awards Manager**

Is there life after DXCC? When you have worked and confirmed all of the entries on the ARRL DXCC Countries list, what then? Do you try for all-modes or five band DXCC, or do you broaden your horizons? Whatever you choose, you will find that there certainly is life after DXCC!

One of my compatriots approached me commenting on this very question. He said *"I've worked them all (DXCC Countries), what do I do now?"* I handed him a copy of the IOTA (Islands on the Air) program. Having worked all DXCC countries, it was obvious that some islands, or island groups, were indeed "countries" in their own right, which would give him a healthy start to the IOTA program. This number of Island groups would only be (pardon the pun) a mere "drop in the ocean". Just living in Australia is a start. We are Oceania-001!

The IOTA program consists of 17 separate awards. They may be claimed by any licensed amateur for contacts since 1 December 1964, with the required number of islands/countries, both world-wide and regional. It is an evolving program with new islands being added to the list for first time contacts. The awards series includes IOTA-Africa, IOTA-West Indies, IOTA-N America, IOTA-Asia, IOTA-British Isles, IOTA-Oceania, IOTA-Antarctica, IOTA-Europe, IOTA-S America, IOTA-Arctic Isles, IOTA World Diploma, and the IOTA Century Clubs 100, 200, 300, 400, 500 and 600.

All communications about the IOTA rules and forthcoming activities, including requests for directories, should be sent to Roger Ballister G3KMA, IOTA Director, La Quinta, Mimbridge, Chobham, Woking, Surrey GU24 8AR, England.

At the time of going to press, I have not received any information concerning an IOTA checkpoint in Oceania. I do know that one high-profile amateur was making overtures to the IOTA directors. If any of our readers has information that would assist, I would be grateful. In the absence of a regional check-point for QSL cards, Philip Marsh G4WFZ, 28 Orcheston Road, Charminster, Bournemouth BH8 8SR, England is authorised to check cards and answer requests for certificates for all amateurs outside Europe, USA and Canada.

The IOTA directory is available on disk for an IBM compatible PC in WordPerfect, Wordstar, and plain ASCII. Write for details of price, specifying the type and format of disk required (the disk itself will be included in the price) and the likely number of users.

The IOTA 100 Islands of the World is the basic award, and the place to start. This requires proof of contact with 100 or more islands/groups with different reference numbers in the directory. At least one contact should be with EACH OF THE SEVEN CONTINENTS.

The IOTA 200, 300, 400, 500 and 600 islands awards are issued for confirmed contacts of those numbers or greater. Each continental award is for contacting 75 percent of the numbered islands/groups in that continent, OR, alternatively, 75 islands/groups, whichever is the less.

The IOTA Arctic Islands, British Isles and West Indies awards follow the same percentage rules as above. The relevant islands/groups are marked by an "A" "B" or "W" as appropriate on the continental pages.

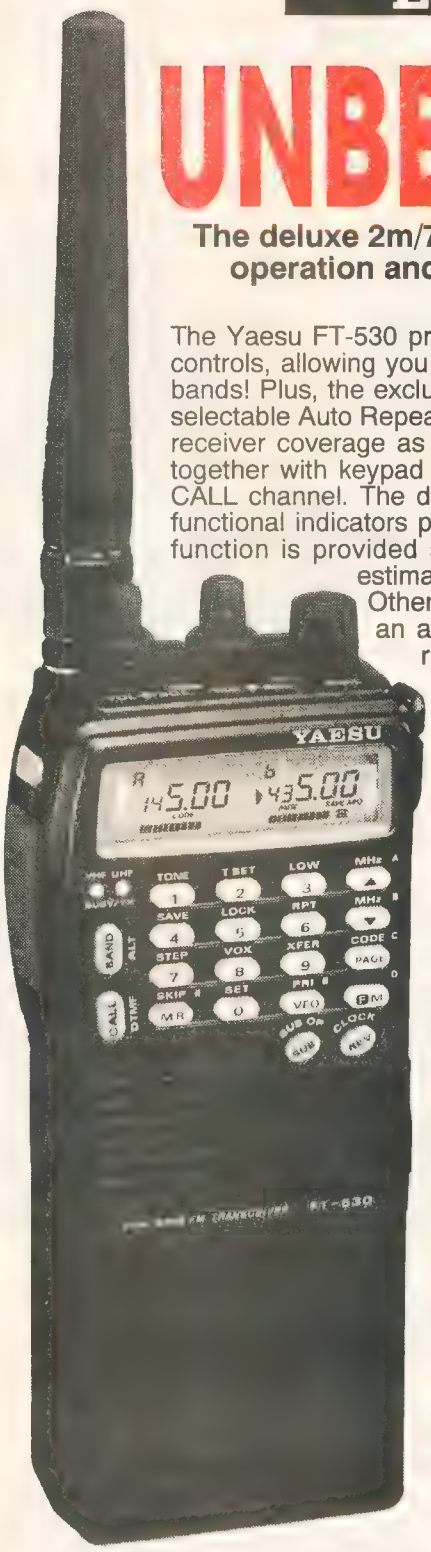
The IOTA World Diploma is for contacting 50% of the numbered islands/groups, OR, alternatively, 50 islands/groups, whichever is the less, in each of the seven continents.

In all cases, if the qualifying percentage figure works out as a fractional number, round the fraction down to the nearest whole number. Remember, only one confirmed contact counts for credit for each IOTA reference number. QSLs from different islands with the same reference number do not count separately. All

DICK SMITH ELECTRONICS

UNBEATABLE VALUE!

The deluxe 2m/70cm dual-band hand-held Transceiver that offers easier operation and more features than ever before is still available at an unbelievably low price!



The Yaesu FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band or one frequency on both bands! Plus, the exclusive Australian version features full 70cm band coverage (420-450MHz), selectable Auto Repeater Shift on both 2m and 70cm (suits Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tunable memories per band are provided, together with keypad or dial frequency entry, seven selectable tuning steps and a one-touch CALL channel. The dual 5.5-digit LCD screen is back-lit for easy viewing and includes many functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter function is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt CTCSS encode/decode, CTCSS scanning, an auto battery saver (ABS) for extended battery charge life, a cross-band repeater facility and an inbuilt clock with alarm and snooze functions. Also provides VOX circuitry for use with the optional YH-2 headset, a user-replaceable Lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows simple transceiver powering and NiCad charging, with RF output in four selectable steps up to 5W at 12V. The FT-530 comes complete with an ultra high-capacity 1000mAH NiCad battery, belt clip, carry case and approved AC charger.

Cat D-3620

Specifications

2 Year Warranty

Frequency range:	
Transmit:	144-148MHz, 420-450MHz
Receive:	130-174MHz, 420-500MHz, 800-950MHz
Current consumption:	
Auto power off	150uA
Standby (saver on)	16.8mA (both bands)
Dimensions:	55(W) x 163(H) x 35mm (D)
Transmitter:	
Power Output:	5, 3, 1.5, 0.5 (at 12V)
RF Power Output:	2.0W (2m) 1.5W (70cm) (Supplied 7.2V 1000mA/H NiCad)
Receiver:	
Sensitivity:	2m: < 0.158uV, 70cm: < 0.18uV (Ham bands only, 12dB SINAD)
Selectivity:	>60dB
Audio Output (12V):	300mW at 8 ohms (at 12V)

YAESU

$699 Still Available At This Special Low Price!!

Don't go mobile without a Yaesu Mobile Transceiver!

Whether you're going bush or operating around town, a quality mobile transceiver from Yaesu delivers the best performance.

FT-2400H Rugged 2m Transceiver

The ultimate in dependability and reliability! The FT-2400H is built using commercial grade mechanical and electronic construction techniques and meets the tough USA MIL- STD-810C shock and vibration requirements, so you know you're getting the highest quality. A one-piece die-cast chassis/heatsink allows three-step output of up to 50 watts without forced air cooling. Plus, fibreglass circuit boards and chip components provide professional-grade reliability. It has a large backlit LCD screen, backlit knobs and 31 tuneable memories (which can store frequency and a four-character name of your choice). A customised microprocessor also provides Auto Repeater Shift to suit Australian conditions. Two-stage track-tuning and a dual FET mixer improve receiver intermod performance. Scanning functions include programmable scan limits, selectable scan resume modes, memory skip, and priority monitoring.Seven selectable channel-steps and CTCSS encode are standard features. Comes complete with MH-26 hand mic., mobile mounting bracket and DC power lead.

Cat D-3630

$649 *2 Year Warranty*

Specifications

General

Frequency range:	Transmit 144-148 MHz Receive 140-174MHz
Channel steps:	5, 10, 12.5, 15, 20, 25 & 50kHz
Current Consumption:	Receive: 400mA Transmit: 12 Amp (Hi power)
Dimensions:	160 x 50 x 180mm (w/o knobs)

Receiver

Intermediate Freq:	21.4MHz & 455kHz
Image Rejection	Better than 70dB
Maximum AF Output:	2.0 watts into 8 ohms @ 10% THD

Transmitter

RF Output power:	50/25/5 watts (Hi/Med/Low)

YAESU

Yaesu FT-840 HF Transceiver

Blending the high-performance digital frequency-synthesis techniques of the FT-890 with the operating convenience of the FT-747GX which it replaces, the all new FT-840 HF mobile transceiver sets the new standard for high performance in affordable transceievers. Covering all HF amateur bands from 160m-10m with 100w P.E.P output, and with continuous receiver coverage from 100kHz to 30MHz, the FT-840 provides SSB/CW/AM operation (FM optional), 100 memory channels, a large back-lit LCD screen, two independant VFOs per band, an effective noise blanker and an uncluttered front panel, all in a compact case size of just 238 x 93 x 243mm (WHD). Unlike some competing models, small size doesn't mean small facilities. The FT-840 provides easily-accessible features such as: Variable mic. gain and RF power controls, SSB Speech processor for greater audio punch, and IF Shift plus CW Reverse to fight interference. Dual Direct Digital Synthesizers ensure clean transmitter output and fast Tx/Rx switching, while the low-noise receiver front-end uses an active double-balanced mixer and selectable attenuator for improved strong signal handling. The FT-840 weighs just 4.5kg and uses a thermally-switched cooling fan, surface-mount components and a metal case for cool, reliable operation. An extensive range of accessory lines are available, including the FC-10 external automatic antenna tuner, so you can customise the FT-840 to suit your operating requirements.

YAESU

Cat D-3275

2 Year Warranty *Still only* **$1595**

Quality Transceiver Accessories!

VHF/UHF Power/SWR Meter

A high quality SWR/Power meter suitable for amateur, UHF CB and commercial applications. High-quality Japanese construction assures you of maximum reliability. It has an all-metal case, large meter display, 140-525MHz coverage with less than 0.3dB insertion loss, and 4W, 20W & 200W power scales. Revex model W540.

Cat D-1370

$199

With PEP Reading! HF/6m Power/ SWR Meter

A quality wide-band SWR/power meter with accurate PEP metering. Manufactured in Japan, it's very well constructed with an all-metal case. Features include a large, back-lit meter, 1.8-60MHz coverage with less than 0.1dB insertion loss, 20W, 200W and 2kW power scales, and LED indicators for Average/PEP operation. Requires 13.8VDC at 200mA. Revex model W502

Cat D-1360

$199

Revex W56ON HF/VHF/UHF SWR/PWR Meter

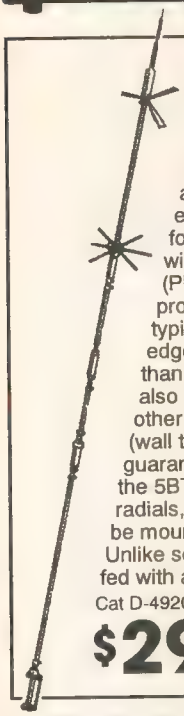
Another quality Revex wide-band SWR meter, offering 2 inbuilt sensors for 1.8MHz to 525MHz coverage! Provides measurement of 3 power levels (3W, 20W, 200W), SWR (at low and high power levels) and uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm.

Cat D-1375

$369

Limited Stocks

Rugged HF 5-Band Trap Vertical Antenna



The rugged 5BTV is a 5-band HF trap vertical which continues the Hustler tradition of quality and performance. It incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1 kw (PEP) power handling. Wideband coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, < 2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at less than 2:1 SWR. An optional 30m resonator kit can also be installed without affecting operation of the other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability. At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with a radial system. Unlike some other antenna designs, the 5BTV can be fed with any length of 50-ohm coax cable.

Cat D-4920

$299

HUSTLER®

2m/70cm Mobile Antenna

The ST-7500 is a high-quality medium-sized dual-band antenna that uses a ground-independent design and tiltable stainless steel whip structure to provide excellent mobile results. It's just 1m long, yet provides approximately 3dB gain on 2m and 5.5dB on 70cm with a maximum power rating of 150 watts. Requires an SO-239 antenna base or SO-239 magnetic base.

Cat D-4810

$79.95

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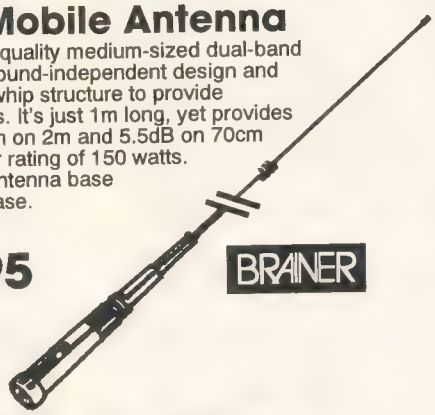
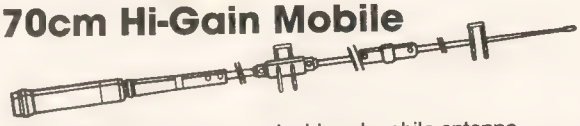


2m/70cm Hi-Gain Mobile



The ST-7800 is our best long-range, dual-band mobile antenna providing high gain (4dB on 2m and 7.2dB on 70cm), while only 1.5m in length. It incorporates an inbuilt tilt-over mechanism and has a maximum power rating of 150 watts. Requires an SO-239 antenna base.

Cat D-4815

BRAINER

$129.95

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contacts must be made personally by the holder of the callsign, and such contacts must be made with licensed amateur stations. All contacts must be made on the 1.8, 3.5, 7, 10, 14, 18, 21, 24, or 28 MHz bands.

Contacts may be made from any location in the same DXCC country, including when the operator is land mobile. Contacts with land mobile stations on islands will be accepted if the exact location is clearly stated on the QSL card. Contacts with maritime mobile stations near islands, whether or not they operate with a /MM suffix, will NOT be accepted. This also applies to stations on board ships in harbour, except that credit may be given if an essential part of the station, ie the transceiver, beam antenna, or power supply, is shown to have been on shore.

Credit will be given for contacts made entirely on a single mode of transmission, or on a combination of modes. Certificate endorsements for single mode, and/or single band transmission, may be made on the submission of cards clearly confirming the mode or frequency, but the request must be made at the time of the submission. Credit will not be given for cross-mode, cross-band or satellite-aided contacts.

QSL cards submitted should bear an island/group name or other indication of an island QTH such as the name of a town or, in Antarctica, a base. Do not write on, deface, or amend a card in any way, as it may lead to disqualification from the award program.

Wherever possible, submit QSL cards with printed IOTA reference numbers. Where this is not possible, submit QSL cards with at least printed callsigns and island/group names.

Awards with a hand written or type written or rubber stamped callsign or island/group name may be accepted exceptionally, if they are supported by:

1. Mention of the activity in DXNS at the time; and/or
2. Receipt by the IOTA director of similar QSLs from other applicants; or
3. At the discretion of the checker.

Applicants should realise that, on occasions, the checkers will have no option but to reject cards pending the receipt of more information. In such cases a letter from the island operator giving the dates of the operation may provide the only acceptable solution. It will normally be for the applicant to obtain this information.

Applications

1. Start with the basic IOTA 100 Islands of the Air award. Arrange the cards by continent in IOTA reference number order. It is best to send in excess of 100 cards in case any are rejected. In fact, you may send any number of QSL cards for this initial award (in excess of 100), and the extras will be credited to your score shown in the annual listing as well as count towards the higher level awards. Remember, enclose at least one QSL from each of the seven continents.
2. Complete a checklist for each batch of QSLs submitted. This should be typed or clearly printed and the list of cards be by continent in order of IOTA reference number, with callsign and group name.

Certificates will be provided against a specific request accompanied by the correct fee. You may apply at any time through your normal checkpoint. The fee for one certificate is UK4.00 pounds, $US8.00, or 12 IRCs. The fee for two or more certificates requested at the same time is UK3.00 pounds, $US6.00 or 9 IRCs each.

Applicants submitting cards for checking must include sufficient payment to cover their return, whether surface or by airmail. It may be necessary to consult the relevant postal authorities to determine the correct postage.

Please do not send cheques drawn on foreign banks, or foreign currency (except US dollars).

From a copy of QRZ DX dated 20 February, 1995, I quote the following: *The Official IOTA Application Disk is now available from checkpoints, price $US8.00 or 13 IRCs postpaid. This enables the applicant to submit the application/update on disk to the checkpoint where it is checked and amended before the data is passed through to Central Records. After processing, the disk is returned by the checkpoint to the applicant with the credited score/record, ready for the next update. This means that the disk is purchased once only, at the beginning.*

If you have any further enquiries about this particular award, I do have more information, but would have to four finger type for another two days. I don't want to get into bad habits!

*PO Box 2175 Caulfield Junction 3161

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Help stamp out stolen equipment. Always include the serial number of your equipment in your Hamad.

FTAC Notes

John Martin VK3KWA, Chairman, Federal Technical Advisory Committee.*

More Records

A record claim has been made for a 10 GHz contact between Wally Howse VK6KZ at Busselton and Neil Sandford VK6BHT at a site near Geraldton. The date was 14 Dec 1994 and the distance 544.0 km. This is a new VK6 state record and was also the national record until 30 Dec 1994 when VK6KZ and VK5NY made their world record contact of 1912.1 km.

Andrew Anderson VK3KAJ and Karl Harbeck VK3ZKH made a contact of 18.3 km on the 47 GHz band on 9 Feb 1995. This is the first ever record claim for this band and automatically becomes a VK3 and national record. Congratulations.

Band Plan Changes

The item in last month's issue stated that the band plan revision proposals discussed over the last few months had been adopted by Federal Council. This was a misunderstanding on my part. The proposals were in fact held over for the Federal Convention at the end of this month. Further details next time.

Fair Go for Everyone

January 1995 *Amateur Radio* (page 48) included a note from the NSW VHF-SHF DX Group about interference problems from FM voice and packet stations in the narrow band segment of the 2 metre band. The problem is still there, in some cases on or near beacon or weak signal calling frequencies.

FM stations already have use of 80 per cent of the 2 metre band free of any interference from CW or SSB stations. Please, FM operators, let CW and SSB stations have the same fair go in their 20 per cent of the band!

*PO Box 2175, Caulfield Junction, VIC 3161

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Contests

*Peter Nesbit VK3APN — Federal Contest Coordinator**

Contest Calendar April-June 95

Apr 1/2	SP DX Contest (CW)	(Mar 95)
Apr 8/10	JA DX CW Contest (High Bands)	(Mar 95)
Apr 9/10	Israel DX Contest	(Mar 95)
Apr 9/10	"King of Spain"CW & SSB Contests	
Apr 29/30	Helvetia DX Contest	(Mar 95)
May 6/7	ARI Contest CW/SSB/RTTY	
May 13/14	CQ-M Contest	
May 13/14	Sangster Shield (80 m ZL)	
May 27/28	CQ WPX CW Contest	(Feb 95)
Jun 3/4	RSGB Field Day CW	
Jun 10/11	ANARTS (VK) RTTY	
Jun 17/18	VK Novice Contest	
Jun 17/18	All Asia CW DX Contest	
Jun 24/25	ARRL Field Day	

Radio Communications for February carried an interesting snippet about the WU1F "TACO", which stands for "Totally Automated Computer Operation". It seems he developed and ran such a system during the CW legs of the 1994 ARRL 10 m contest and the CQWW, using it to make about 100 QSOs in each. Apparently the machine searched for stations automatically, and made QSOs with those who WU1F asked it to work. It seems it needed fairly good signals to work properly, and needs further development, but this does show the inexorable forward march of progress (or retreat, depending on your point of view)!

"TACO" is strangely reminiscent of those clunky chess computers that started appearing 10-12 years ago. In those days, the machines were not a patch on a good human player, but since then have developed to the point where they give the top players a very difficult time. Although the task of finding and identifying callsigns during a contest is probably significantly more difficult than that of working out chess moves, due to QRM, etc, I am sure we will be hearing more about this sort of thing over the years to come. Who knows, maybe one day we will even see contests organised expressly for machines, as has already been happening for some years in the world of chess! What fun for us humans! As they used to say, "Stop the world, I want to get off!"

Last month's introduction contained a typo which possibly caused a near fatal heart condition for some readers, which was "It is time to discontinue the RD as a contest between Divisions... ?" As many probably guessed, the first two words of that sentence were inadvertently reversed. My apologies for any alarm!

Many thanks this month to VK2PS, VK3KWA, HB9DDZ, OE4BKU, SP6FER, UV3BW, *CQ,* and *Radio Communications.* Until next month, good contesting!

73,
Peter VK3APN

Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in April 1993 Amateur Radio (I'll get around to revising them some day).

Addendum to SP DX Contest (1/2 April)

The updated rules for this year's contest, just received, reveal that this year's event is for CW only (the rules published last month indicated SSB only). There are no other changes. Over the last few years this contest has alternated between SSB one year, and CW the next, which is something to remember for next year! Hopefully, this advice will reach prospective entrants before the contest.

Addendum to Helvetia DX Contest (29/30 April)

Advice has been received from the manager of this contest that his address is now: "Niklaus Zinsstag HB9DDZ, Salmendorfli 568, CH-4338 Rheinsulz, Switzerland". Please amend the address for logs as shown in last month's issue.

ARI International DX Contest CW/SSB/RTTY

2000z Sat to 2000z Sun, May 6/7

This contest occurs each year on the first full weekend of May. Anyone can work anyone else, and categories are single operator CW, SSB, RTTY or mixed; multi-operator single transmitter mixed; and SWL mixed. Bands are 160-10 m (no WARC). The same station can be worked on the same band once each on CW, SSB, and RTTY, but the multiplier can be claimed only once for that band. Once a band or mode has been used, 10 minutes must elapse before it can be changed. Send RS(T) plus serial number and Italian stations will send RS(T) plus province.

Score 10 points per Italian QSO, 3 points per QSO with stations in another continent, 1 point per QSO with stations in own continent, and zero points per QSO with stations in own country. Final score equals total points from all bands times total multipliers from all bands.

Multipliers are the sum of Italian provinces (max 103) and countries (excluding I and IS0) on each band. Province codes include: I1: AL AT BI CN GE IM NO SP SV TO VB VC; IX1: AO; I2: BG BS CO CR LE LO MI MN PV SO VA; I3: BL PD RO TV VE VR VI; IN3: BZ TN; IV3: GO PN TS UD; I4: BO FE FO MO PR PC RA RE; I5: AR FI GR LI LU MS PI PT SI; I6: AN AP AQ CH MC PS PE TE; I7: BA BR FG LE MT TA; I8: AV BN CB CE CZ CS IS KR NA PZ RC SA VV; IT9: CL CT EN ME PA RG SR TP AG; I0: FR LT PG RI ROMA/RM TR VT; IS0: CA NU SS OR.

Use a separate log for each band, and a check log (ie sorted callsign list) for 100 plus QSOs on any band. Send log within 30 days to ARI Contest Manager I2UIY, PO Box 14, 27043 Broni (PV), Italy. Logs on disk are welcome, and an MS-DOS logging program is available from the contest manager for $US5.00 (to cover disk/postage).

CQ-M Contest (CW, Phone, Mixed)

2100z Sat to 2100z Sun, May 13/14

Sponsored by the Krenkel Central Radio Club, this contest runs on the second full weekend of May each year. Categories are single operator, single and all band; multioperator single transmitter; 20 m SSTV; SWL. Bands are 160-10 m. No cross mode QSOs please. Call "CQ-M", and exchange RS(T) (or RSV on SSTV) plus serial number. Score one point per QSO with own country, two points with a different country in the same continent, and three points with other continents (continents as for WAC). The final score equals total points times total number of countries from each band. Countries are according to the R-150-C list, which is similar to the ARRL DXCC list except for former USSR countries. Serious competitors should review the R-150-C list. Awards apply, and there are achievement awards for stations making

200 plus QSOs. Mail logs by 1 July to "Krenkel Central Radio Club, CQ-M Contest Committee, Box 88, Moscow, Russia".

Sangster Shield

0800-1100z Sat & 0800z-1100z Sun, May 13/14

This unusual contest emphasises low power operation. Work ZLs on 80 m CW. QSOs can be repeated once per 1/2 hour period, ie 0800-0830, 0830-0900, etc. At least five minutes must elapse between repeat QSOs with the same station, or else another station must be worked in between. Send RST plus power output, ZLs will send RST/branch/power. Non-ZLs using *up to 5 W* score 10 points per QSO with a ZL, if the ZL worked is using up to 5 W; or five points per ZL using over 5 W. Non-ZLs using *more than 5 W* score five points per QSO with a ZL using up to 5 W. QSOs between stations where both use more than 5 W are invalid for the contest. Final score equals total points times number of ZL branches worked. Send logs to reach "Contest Manager ZL3KR, 4 Exton Street, Christchurch 8005, NZ" by 9 June. Certificates will be awarded to the highest scoring non-ZLs in their respective call areas.

Result of 1994 SP DX SSB Contest

(Call/Category/Score/QSOs/Pts/Mult)
VK3UX* SO-14 1008 24 72 14

RESULTS OF 1994-1995 ROSS HULL CONTEST

Presented by John, VK3KWA

The changes to the scoring system resulted in a different pattern of activity from previous years. The bands were quieter due to a decrease in local activity. On the other hand the new scoring system led to an increase in the number of longer distance contacts.

With the change from "all in" to "best 100" scoring, anyone who did as well this year as in 1993-1994 could be expected to have a lower score this time round. But, in fact, most scores were much higher this year, again showing that DX activity has increased.

I have again added up the total number of callsigns appearing in the logs. There was a decrease in Victoria and South Australia, which was due partly to the reduced importance of local contacts and partly to poor propagation. On the other hand there was a large increase in activity in most other states, especially Western Australia. There was also increased activity on the higher bands. Overall, contest activity was about 20 per cent higher than last year, and the number of logs was more than 60 per cent greater.

The logs were very well presented and I thank all entrants for making my job easier. The only problem I could find in the logs were a couple of errors in totalling the scores. Special thanks to those who took the trouble to send in check logs, and to those who put a log in this year for the first time.

This Year's Results:

Now to the results. The highest aggregate score has gone again to Roger Steedman VK3XRS, who has now set an all-time record of six consecutive wins. VK6KZ gained second place and VK2ZAB third. On 6 metres, the top score goes to VK2GLS and VK5ZBK, both with the maximum possible score. Other top scorers were VK5AKK on 2 metres, VK2ZAB on 70 cm, and VK3KWA on 23 cm. VK6HK and VK6KZ were equal first on 2.3 GHz, and VK6KZ took out 3.4 GHz and 10 GHz. Congratulations to all. Looking at the scores it is obvious that competition was much more intense this year, and there is a great deal of scoring potential waiting to be tapped on the higher bands. Next year could be very interesting indeed!

Call	Name	6 m	2 m	70 cm	23 cm	13 cm	9 cm	3 cm	TOTAL
VK3XRS	R Steedman	987	2144	2961	3160	143	—	298	9683
VK6KZ	W Howse	352	2528	3353	1430	221	288	704	8872
VK2ZAB	G McDonald	31	3260	3458	—	—	—	—	6749
VK3DEM	R Ashlin	925	1880	2275	1070	143	—	288	6581
VK1BG	I Cowan	170	1948	3017	1380	—	—	—	6515
VK5AKK	P Helbig	220	3844	1841	210	—	—	—	6115
VK1DO	C Davis	492	1888	2394	260	—	—	—	5034
VK3CY	D Clarke	—	2564	2282	—	—	—	—	4846
VK7XR	A Hay	615	2100	1757	300	—	—	—	4808
VK5ZBK	S Ruediger	1000	1280	1316	760	—	—	—	4356
VK3AFW	R Cook	—	1696	2352	40	—	—	—	4088
VK3KWA	J Martin	—	—	—	4060	—	—	—	4060
VK3AUI	G Sones	103	1240	1330	930	—	—	—	3603
VK3ALZ	I Berwick	33	948	1309	1060	—	—	—	3350
VK2FZ	A Pollock	—	—	—	3240	—	—	—	3240
VK3DLM	L Mostert	166	1248	1526	—	—	—	—	2940
VK4KZR	R Preston	31	1308	1491	20	—	—	—	2850
VK2DVZ	R Barlin	—	1040	672	350	—	—	—	2062
VK5NY	R Bowman	—	804	357	360	—	—	320	1841
VK7KAP	A Perkins	11	660	630	200	—	—	—	1501
VK4APG	P Garden	—	1472	—	—	—	—	—	1472
VK3AL	A Elliott	32	312	497	330	—	—	—	1171
VK2GLS	R Lear	1000	—	—	—	—	—	—	1000
VK6HK	D Graham	49	84	161	190	221	272	—	977
VK4DO	W Watkins	762	—	—	—	—	—	—	762
VK6BHT	N Sandford	—	96	—	—	—	—	320	416
VK2BWT	W Thompson	—	224	—	—	—	—	—	224
VK2BBF	G Fletcher	Check log							
VK3BRZ	C Gnaccarini	Check log							
VK4PU	J Purdon	Check log							

Contest Activity Table:

Area	6 m	2 m	70 cm	23 cm	13 cm	9 cm	3 cm	TOT
VK1	6	20	6	6	0	0	0	38
VK2	40	54	13	3	0	0	0	110
VK3	30	52	32	11	2	0	2	129
VK4	46	25	13	2	0	0	0	86
VK5	29	18	16	4	0	0	0	67
VK6	24	27	17	6	2	2	3	81
VK7	12	4	2	3	0	0	0	21
VK8	7	0	0	0	0	0	0	7
VK0	1	0	0	0	0	0	0	1
ZL	44	4	0	0	0	0	0	48
FK	3	2	0	0	0	0	0	5
TOT:	242	206	99	35	4	2	5	593

Notable Contacts:

6 m: VK2GLS — log consisted almost entirely of ZL contacts.
2 m: VK3ZQB — VK6KZ. VK2ZAB wkd five VK call areas plus ZL1TZA, ZL1BIC, FK8GM, FK1UH. VK4APG — ZL4AA, ZL3NE. VK5NY — VK1BG, VK2ZXC, VK6KZ, VK7ZIF.

70cm: VK1DO — VK4OE. VK5NY — VK6KZ. VK5AKK — VK6DM, VK6KZ, VK6WG, VK6YAU.
23cm: VK1DO — VK4OE/2. VK2FZ — VK3TU, VK3KWA. VK5AKK — VK6YAU. VK5NY — VK6KZ.
3 cm. VK6KZ — VK6BHT (new state and national record)
VK6KZ — VK5NY (new world record).

Next Year:

The new rules seem to be working well. There was much less QRM this year on calling frequencies and, hopefully, next year things will be even better

Under the new rules it is still important to show the flag and make as many contacts as possible. The contest brings a number of casual operators into contact with a new aspect of the hobby, and this can help to provide new recruits to the ranks of DX operators Don't pass up the opportunity to work new stations even if they are not "best 100" material!

One other thought is that this year, the logs included new national records and a world record, yet the points scored for these were fairly ordinary and do not seem to reflect the amount of effort and skill involved Here is a thought for next year a 1000 point scoring bonus for anyone who sets a new distance record during the contest Any comments?

Ross Hull Contest Winners, 1950 to 1995:

1950-51	VK5QR	R Galle
1951-52	VK5BC	H Lloyd
1952-53	VK4KK	A K Bradford
1953-54	VK6BO	R J Everingham
1954-55	VK4NG	R Greenwood
1955-56	VK3GM	G McCullough
1956-57	VK3ALZ	I F Berwick
1957-58	VK3ALZ	I F Berwick
1958-59	VK3ALZ	I F Berwick
1959-60	VK4ZAX	D R Horgan
1960-61	VK3ARZ	W Roper
1961-62	VK5ZDR	M J McMahon
1962-63	VK4ZAX	D R Horgan
1963-64	VK5ZDR	M J McMahon
1964-65	VK3ZER	R W Wilkinson
1965-66	VK3ZDM	J R Beames
1966-67	VK5HP	J H Lehmann
1967-68	VK3ZER	R W Wilkinson
1968-69	VK5ZKR	C M Hutchesson
1969-70	VK3ZER	R W Wilkinson
1970-71	VK4ZFB	E F Blanch
1971-72	VK5SU	J W K Adams
1972-73	VK5SU	J W K Adams
1973-74	VK5SU	J W K Adams
1974-75	VK5SU	J W K Adams
1975-76	VK5SU	J W K Adams
1976-77	VK4DO	H L Hobler
1977-78	VK3OT	S R Gregory
1978-79	VK4DO	H L Hobler
1979-80	VK3ATN	T R Naughton
1980-81	VK6KZ	W J Howse
1981-82	VK6KZ	W J Howse
1982-83	VK6KZ	W J Howse
1983-84	VK6KZ	W J Howse
1984-85	VK3ZBJ	G L C Jenkins
1985-86	VK3ZBJ	G L C Jenkins
1986-87	VK3ZBJ	G L C Jenkins
1987-88	VK5NC	T D Niven
1988-89	VK5NC	T D Niven
1989-90	VK3XRS	R K W Steedman
1990-91	VK3XRS	R K W Steedman
1991-92	VK3XRS	R K W Steedman
1992-93	VK3XRS	R K W Steedman
1993-94	VK3XRS	R K W Steedman
1994-95	VK3XRS	R K W Steedman

RESULTS OF 1995 VHF-UHF FIELD DAY

Presented by John, VK3KWA

The level of activity this year was higher on six metres due to some very good sporadic E, and rather flat on higher bands with very little in the way of tropo openings Once again the main activity was in the south-eastern states, with only two portable stations operating in NSW, and one each in Queensland and WA.

An interesting feature of the results is that most six-hour stations did better than most 24-hour ones The reason seems to be that the six-hour stations were in areas where there were more stations to work.

Several stations worked VK0IX on six metres, and there were a number of interstate contacts on two metres and above The most notable contact was a new VK1 record between VK1DO and VK4OE/2 on 1296 MHz

There were far too many contest exchanges on DX calling frequencies, especially 50.110 MHz, which should never be used for contest operation

Some entrants felt that the incentive to go portable was reduced by dropping the double scoring for portable stations. In fact, it makes no difference because home and portable stations are in different sections However, I have no problems with changing it back if that is what entrants want One valid point is that contacts between two portable stations should score more than a portable to home station contact.

It was also pointed out that the scoring system favours the lower bands in spite of the band multipliers. The reason is that the number of contacts on each band is multiplied by the number of grid squares worked. If an operator has a large score on two metres and then works an extra grid square, this extra square is multiplied by all of the contacts he has made on the band On higher bands, such as 1296 MHz, there are fewer contacts in the log and an extra grid square does not boost the points score by anywhere near as much.

I agree that this is a problem and it is certainly not the aim of the Field Day to discourage people from using higher bands — quite the opposite. So some change is needed. The best option could be to add the QSO and grid square points rather than multiplying them.

Results:

The winner in the 24-hour section was Rod Collman VK2TWR, and the top 6-hour scorer was Ron Cook VK3AFW. In the multi-operator section, the Geelong Amateur Radio Club wins again. Rob Ashlin VK3DEM, entered as a home station this year and took out first place

Special congratulations are due to Rob VK2TWR for coming out a clear winner in his first ever Field Day, just as Rob VK3DEM did in 1993. Congratulations also to all other entrants.

Call	Name	Loc	6m	2m	70cm	23cm	TOTAL
SECTION A — PORTABLE, SINGLE OPERATOR, 24 HOURS							
VK2TWR	R Collman	QF43	240	2464	672	—	3376
VK4OE/2	D Friend	QF59	12	864	210	80	1166
VK5XY	C Luke	PF95	—	48	42	10	100
VK2XCI	N McMillan	QF27	—	96	—	—	96
VK6BWI	P Parker	OF77	—	96	—	—	96
SECTION B PORTABLE, SINGLE OPERATOR, 6 HOURS							
VK3AFW	R Cook	QF32	—	1488	1386	—	2874
VK3DLM	L Mostert	QF21	9	864	714	—	1587
VK3ATQ	J Patterson	QF21	435	576	—	—	1011
VK4NEF	E Fittock	QG63	—	432	—	—	432
SECTION C — PORTABLE, MULTI OPERATOR, 24 HOURS							
VK3ATL	GARC (1)	QF22	4386	6440	5964	460	17250
VK5ARC	SCARC (2)	PF94	4142	7436	1988	320	13886
VK1DO	C Davis	QF44	2001	7828	2632	728	13189

SECTION D — HOME STATION, 24 HOURS

VK3DEM	R Ashlin	QF32	204	1656	1904	845	4609
VK3CY	D Clarke	QF13	—	2256	154	—	2410
VK5NY	R Bowman	PF94	459	756	245	—	1460
VK3AUI	G Sones	QF22	66	608	560	160	1394
VK3AL	A Elliott	QF22	54	128	252	220	654
VK7XR	A Hay	QE38	286	128	147	—	561
VK7KAP	A Perkins	QE38	1	144	168	30	343
VK5LP	E Jamieson	PF94	81	160	35	30	306

(1) Geelong Amateur Radio Club
(2) South Coast Amateur Radio Club

Some Comments from Logs:

"The boys had a terrific time ... All call areas of VK worked except VK9 ... Maybe the 35 degree temperature discouraged many ... The number of contacts was disappointing but most of the locals were busy driving tractors ... It was great to work VK0IX ... Would have preferred 12 noon finish here in VK4 ... Six metres yielded 34 grid squares and contacts into all states ..."

Most entrants reported fine weather this year. However, in the interests of balanced reporting, here are some extracts from a letter sent by Alan Raftery, VK5BW, whose absence was noted this year.

"I could see a dust storm coming toward me. Two minutes later the tent was down, the metal poles bent by over 90 degrees. For the next fourteen hours it hailed and rained continuously and the heavy winds never abated. Next morning I awoke to see one of my masts leaning at 30 degrees from vertical. As I approached the mast it toppled over in front of me. Still not worried, I awaited the arrival of John VK5AJQ. Try as he could, John was only able to come within 3 km of the site. The rain had made the track a quagmire. I faced the reality of the situation and left just before the Field Day commenced. Over 50 mm of rain fell and it took me six hours to return to Adelaide exhausted. I hope to try Mt Bryan again for the John Moyle Field Day in March."

What more needs to be said? What a hobby! See you all next year — weather permitting, of course!

*PO Box 2175, Caulfield Junction, VIC 3175

Divisional Notes

Forward Bias — VK1 Division Notes

Peter Parker VK6BWI/1

VK1 Broadcast Service Improved

To provide a more comprehensive coverage of amateur radio events in the Canberra region, the VK1WI broadcast is now transmitted every week. Tune in each Wednesday at 8 pm on 3.570 MHz LSB, 146.950 MHz FM or 438.525 MHz FM. A more frequent service requires more material from you, the member. Contact the Broadcast Officer, Peter Westerhof VK1NPW, if you have news and information to contribute.

Mt Ginini Back on Air

As foreshadowed in February *Amateur Radio,* this wide-coverage repeater (6950) is back on air and working well. Further repeater developments in the ACT are planned.

There have been some good conditions on VHF recently and stations from Newcastle, Bathurst and Orange have been heard on the 6900 repeater.

Divisional AGM a Success

Our Annual General Meeting was held on Monday, 27 February. The existing committee was re-elected with two new additions. Alex VK1AC now keeps a watchful eye over Divisional finances, while I, who had only been in Canberra for ten days, somehow became the Publicity Officer! We also welcome Jim VK1FF as a new committee member.

Plaques of recognition for outstanding service to the Division were awarded to Christopher VK1DO and Jan VK1BR for their running of the Divisional Examination Service for several years.

Those at the AGM were treated to a demonstration of the AEA Graphical HF Antenna Analyser by Peter Ellis VK1KEP. The instrument displays an LCD graph of SWR versus frequency, and no transmitter is required. The analyser is simply connected to an antenna and an SWR curve is plotted in a few seconds. The unit is handheld and sells for approximately $800. Covering 1.8-30 MHz, the device would seem indispensable to the inveterate antenna experimenter.

VK2 Notes

Richard Murnane VK2SKY

Pleased to Meet You

I am writing this just a few days after the Central Coast Field Day, which seemed a little quiet this year. The entire Divisional Council was there (unlike last year). Your Councillors would like to thank all of you who stopped to talk, sign the petition, and don your *Proud to Be a Member* badges. After all the turmoil of the last year or so, it was good to see so much positive support for the Division. We have at last turned the corner.

..."til the Fat Lady sings

The new amateur licence fees were due to come into effect on 1 March, but appear to have been delayed until at least the end of April. At this stage, it's difficult to say what effect our protests have had. It's been reported that the SMA has produced a new discussion document on the issue, entitled *A New Outlook* (perhaps *Look Out!* might be nearer the mark...). Deadline for further comment is now apparently 21 April, so get a copy of the document from the SMA, and keep writing those letters!

On 3 March I heard an amateur on the Dural 2 m repeater say he had been **unaware** of the proposed fee increase. I wonder where he has been for the last three months — isn't this hobby of ours supposed to be **about** communicating? Worse, perhaps, the amateur who informed him of the increase seemed to think there was nothing we could do about it. Such defeatism!

Meanwhile, our submission to the SMA has been publicised on packet, in *Amateur Radio Action,* and as an insert in *Amateur Radio.* So far, the response has been good, though a handful of people criticised the Division for having the initiative to produce a submission at all. Just goes to show you can't please everyone.

Early Radio

We'd like to offer our congratulations to Divisional Councillor Peter Jensen VK2AQJ, who has recently published his excellent book, *In Marconi's Footsteps: Early Radio.* The book features many photographs illustrating Marconi's pioneering work in the development of early radiocommunication systems and includes a number of construction projects that allow the reader to replicate some of Marconi's experimental equipment. *In Marconi's Footsteps* is available from the Divisional Bookshop.

Car Badges

There has been some recent interest shown in car badges, or just nice car type

badges to stick on your shack wall. Last seen around 1979 or so in this Division. The latest cost for such a badge, which would stick on rather than screw on, is around $25.00. If there is sufficient interest, we propose to go into production. We need 500 starters. Please indicate your expression of interest to the VK2 Divisional Office.

Thought for the Month

An optimist may see the light where there is none, but why must the pessimist always run to blow it out? *Michel de Saint-Pierre, quoted in "You Can't Afford the Luxury of a Negative Thought".*

VK6 Notes

John R Morgan VK6NT

Thanks

Last year, when Peter VK6BWI volunteered to re-start the "VK6 Notes" column, the Division was grateful. After a few months of reading his output, we were impressed! Peter's career now takes him to VK1, and so VK6 has lost one of its true experimenters. Thanks, Peter, and enjoy the snow!

Annual General Meeting

The VK6 Division's AGM will be held on 18 April 1995 at the Westrail Centre, East Perth, following the General Meeting which starts at 8 pm. For more detail, please refer to Peter's "VK6 Notes" in the February 1995 issue of *Amateur Radio.* As usual, the bookshop and QSL bureau will open at 7 pm.

February General Meeting

At the February GM, Bruce VK6OO presented a talk which was enigmatically-entitled "Those Surfing Electrons". The speaker described the various internal sub-systems of a modern medical x-ray machine and, in particular, the linear accelerator. And yes, these "linacs" do contain bunches of electrons "surfing" the wave-fronts of microwave beams!

Demonstration of InterNet

At the March meeting of the Western Australian Amateur Digital Communications Association Inc (known as WAADCA, pronounced wad-kah), Jeff Johnson of "Dialix" gave a live demonstration of some of the capabilities of the InterNet. The meeting was well-attended, and Jeff answered many questions. The doors of the Wireless Hill meeting room were locked-up shortly before midnight, which says quite a lot.

Club Station VK6QC

The club station at the Para-Quad Centre in Shenton Park, callsign VK6QC, has been operating for about 18 months, and is affiliated to the VK6 Division. About six residents meet in the "radio shack" every Sunday morning to listen to the VK6WIA news broadcast. None of the residents is yet licensed, so local operators supervise these sessions. Volunteers include VK6s AUZ, BC, RR, SC, THB, VP, and ZW.

The station operates an "early synthesised" rig for working on VHF FM, usually via the local repeaters, and an FM-828 for VHF packet. The latter mode is a most popular activity, with an average of 12 to 14 messages sent (and a similar number received) each week. Although the club's VHF antennae are not the best, VK6QC did manage to raise a creditable 64 points in the VHF/Phone section of last year's RD contest.

The club's immediate goals are to acquire an HF transceiver and to recruit more volunteer supervisors, especially those who are available on weekdays, either daytime or evenings. In the longer term, several of the residents have expressed interest in obtaining their licences, but the practicalities of arranging a course of study have yet to be overcome.

Morse Practice Beacon

The Morse practice beacon has re-commenced transmissions and is using its new permanent callsign of VK6RCW on 147.375 MHz. The system now has a 25 W transmitter, and will be located at the QTH of Joe VK6ZTN in Mt Pleasant, or Phil VK6SO in Kewdale, until it finds a permanent home. It is hoped that a 3.5 MHz output for this WIA-funded project will commence operation later this year.

Reminder

Just a reminder that all contributions to this column must arrive on or before the first day of the month preceding publication. Items from country members and clubs will be especially welcomed. All mail to PO Box 169, Kalamunda WA 6076.

Sign up a new WIA member today. We need the numbers to protect our frequencies and privileges.

"QRM" — News from the Tasmanian Division

Robin L Harwood VK7RH

The Divisional Annual General Meeting was held on 25 March, but as I am writing this on 27 February, it is beyond my capabilities to know in advance what transpired. However, all will be revealed in the May issue of *Amateur Radio.*

The various Branch AGMs were held in February and I can now report the following officers were elected. Please note that I have only included the principal office-holders due to space limitations.

We commence with the Southern Branch, which met on 1 February. Andrew Dixon VK7GL, was re-elected as President with Matthew Richardson VK7JUF as Secretary.

The Northern Branch met on 8 February and Joe Gelston VK7JL was re-elected unopposed. Bob Richards VK7NRR was elected as Secretary/Treasurer.

The final AGM was the Northwestern Branch on 14 February which saw the re-election of David Spicer VK7ZDJ as President. Ron Churcher VK7RN is the new Secretary.

Don't forget that the Divisional Broadcast is now on at 2300 UTC Saturdays (0900 EAST Sundays) since we returned to Standard Time on 26 March. Interesting to have more interstate reports since some Divisional broadcasts are now monthly. The main frequencies are 3570, 7090 and 14130 kHz plus relays on your local VK7 Repeaters. There is also a Tuesday repeat at 0930z prior to the Tasmanian Devil Net on 3590 kHz. The Wednesday Northern broadcast of VK7NB at 0930z may be only on the VK7RAA 2 m repeater now due to difficulties in relaying to 3590 kHz.

At the end of this month, the prestigious "Targa 95" International motor rally will be held on Tasmanian roads. Once again, WICEN Tasmania will be assisting with communications back-up to the Targa comms. If you do hear WICEN traffic on 2 m, we would strongly recommend that you keep clear of the channels, as past experience has shown WICEN has been used to fill in the gaps in Targa comms.

In conclusion, I have to report that there are two silent keys from VK7. A Morrisby, who held the call of VK7MY until a few years ago, passed away. I believe he worked for many years at Watson's Wireless. Keith Miller, who was VK7SU, passed away in February. He mainly operated on 20 m to GM and ZL.

Don't forget to drive safely over the Easter break!

ar

How's DX

*Stephen Pall VK2PS**

When you read these lines we will have already passed the autumnal Equinox on 21 March. For those who have forgotten it, there are two days in the year when the Sun is directly above the Earth's Equator. At these times the days and nights are of nearly equal length everywhere on Earth. The term equinox comes from a Latin phrase, meaning equal night.

One can notice that, with the movement of the Sun from our southern region towards the north, propagation is changing. Solar Cycle 22 is still declining. However, propagation has improved considerably during the past few weeks and, generally, should be satisfactory in April.

Solar flux was in the high 80s on many occasions and there were days when it was even in the high 90s. The boost in the flux number has increased the maximum useable frequency limits (MUF).

Propagation on 20 metres has improved. Europe on the long path came in strongly for hours on many days around 0630 UTC, and changed towards the short path at around 1200 UTC on 20 and 15 metres. There were even short openings on 10 metres when Italy could be worked at around 1100 UTC. Early morning activities at around 1800 UTC on 40, 80 and 160 metres are also improving. Good openings to Europe and Africa around our sunrise are not uncommon.

All in all, propagation is improving, relatively speaking, so make the most of it in the next six months.

Conway Reef — (Ceva I Ra) — 3D2

Conway Reef lies south west of Viti Levu, the main island of the Fiji group, at a distance of about 300 nautical miles and at 21° 44' South, 174° 35' East. The mean tide level is three feet. The actual island of the Reef is only about 200 metres long and 50 metres wide during high tide, whilst the treacherous reef which surrounds it is about 1 by 3 km in size.

The journey from Fiji to Conway Reef takes about two to three days, depending on the weather, which is unpredictable.

The weather can change rapidly and so do the currents around the reef. When approaching the reef the waves are usually far too high for landing and it requires an experienced skipper to find one of the very few openings which lead to the calm waters in the inner lagoon of the reef. Landing is possible only at high tide and in daylight.

Vegetation is very sparse, but the island is infested with hermit crabs and lots of boobies which carry ticks. These ticks were the biggest menace to previous DX operators and there is no doubt that the present expedition will also suffer from the ticks. Sudden change of wind and rainstorms are also frequent and one hopes that the tents housing the equipment will withstand the force of the wind. The first activity on Conway is dated April 1989 by 3D2CR. The next move was by Baldur 3D2SI (DJ6SI), Henry 3D2HL (DJ6JC), Vince 3D2VT (K5VT) and Karl 3D2WV (DK2WV) during July 1989.

No sooner did the ARRL DXCC accept Conway Reef as a new DX country in December 1989 than plans were made by a big international group to put a dent into the "most wanted" country status of Conway Reef. Seven operators, Masa JG2BRI, Wayne N7NG, Pekka OH1RY, Martii OH2BH, Mats SM7PKK, Steve VE7CT and Dale VE7SV, under the sponsorship of the "Yasme Foundation" and using the callsign 3D2AM, landed on the reef in May 1990. The group used five stations in two camps about 200 metres apart and made about 45,000 QSOs.

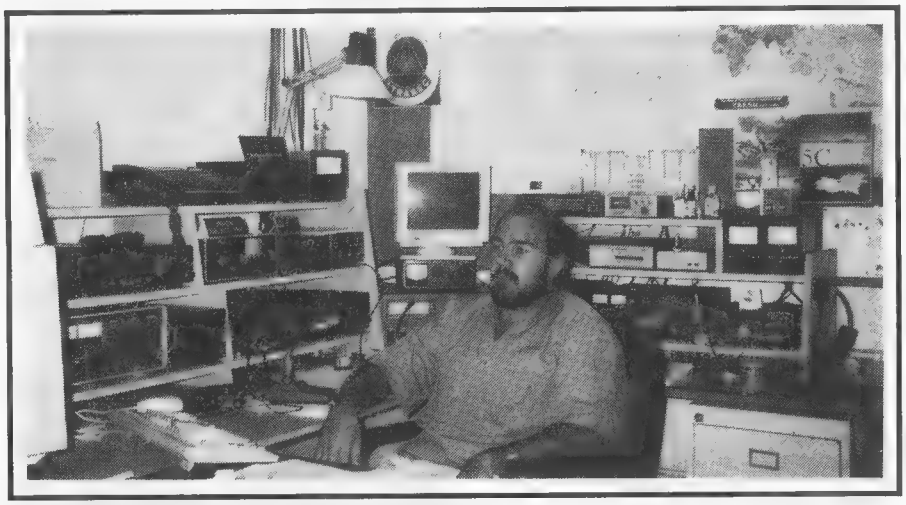
By the time you read this, the present expedition will have been active since 24 March and, according to the plan, will finish on 3 April (see "Stop Press", *Amateur Radio,* March 1995). The expeditioners are using three stations with beams for higher bands and verticals for the lower bands. Due to the sunspot cycle situation they will try to give a good coverage on lower bands. Two stations will be active 24 hours a day and a third station will operate on RTTY. The four operators, SM7PKK, OH1RY, NI6T and SM6CAS, will have a very busy two weeks of operating, not to mention other possible difficulties which Mother Nature may create.

Operational frequencies were given in the March issue of my column. They will always listen up and will try to use minimum bandspread in the pile up. There are two QSL routes: SSB, Phillip Marsh G4WFZ, 28 Orcheston Road, Bournemouth, BH8 85R, Dorset, United Kingdom; and CW/RTTY, Mats Persson SM7PKK, Zenithgatan 24#5, S-212 14, Malmoe, Sweden (this is a new and correct address for Mats).

International Marconi Day — VK2IMD

In 1988 the Cornish Radio Amateur Club started a commemorative activity to celebrate Marconi's birthday which falls on 25 April. This event is always celebrated on the nearest Saturday to the actual birthday. In 1988 there were only six participant stations. This year there will be approximately forty stations participating.

One of these stations will be VK2IMD, operated by the Wahroonga Amateur Historical Radio Association (WAHRA), PO Box 600, Wahroonga, NSW 2076. Send your QSL cards to this address with a stamped, self addressed reply envelope. The activity is for a continuous 24 hour period, starting at 0001 UTC on 22 April on all bands, SSB, CW, FM and packet. There is also an attractive award issued by the Cornish Radio Amateur Club if you work a specified number of participating Marconi stations. In 1994, 250 such awards were issued. This year Marconi Day has its special significance as it celebrates the centenary of the first wireless message generated by Marconi from Villa Griffone in Italy in the year 1895. After offering his invention to the Italian



Eric FK8GM in his well equipped "shack".

Government, which showed no interest in the work of the young inventor, Marconi, being a bi-lingual engineer, went to the United Kingdom to further his own career. The rest of his life is now part of the history of wireless communications.

Pratas Island — a New DX Country?

A news release dated 2 February 1995, issued by the DXAC, said *The ARRL DX Advisory Committee (DXAC) voted 8 to 7 to reject a petition to add Pratas island to the DXCC countries list based on point 2(a) of the rules, ie separation by water.*

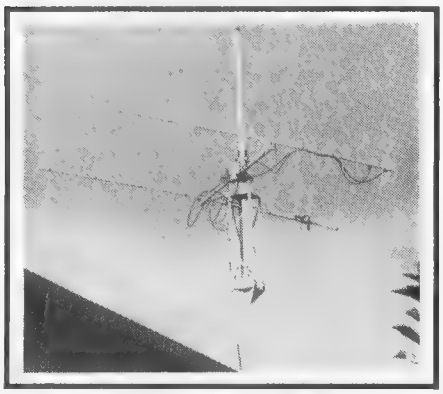
Some of those voting against cited concerns over the possibility of intervening rocks. Others cited what they perceived as disputed ownership of the island.

"Rocks" both above and below the high tide seem to cause problems in recognition of Pratas Island (Republic of China, Taiwan) and Scarborough Reef (Peoples Republic of China) as a new DXCC country.

Bhutan — A5

A Japanese group, led by "Zorro" JH1AJT, made a sudden, unexpected appearance as a "demonstration station" from Thimphu, Bhutan from 1 February until the evening of 4 February. They were active on many bands and were quite good copy in Australia.

Amateur radio legislation still does not exist in Bhutan, and the activity was initiated via a high ranking educational official from the Ministry of Communications. The JA operators obtained the necessary documentation from the Bhutanese authorities and this already has been sent to the DXCC. A total of 8200 contacts were made in CW, SSB and FM modes. Directional breakup of the QSOs is as follows: USA (970), Europe (950), Japan (5940) and other areas (this includes the rest of the world) 340. QSLs go to Yasuo Miyazawa JH1AJT, PO Box 8, Asahi-Ku, Yokohama, 241 Japan.



The satellite antenna system of Eric FK8GM.

Antarctica

Here is an additional list to the one published in the February issue of *Amateur Radio* about amateur stations which were, or are, active in Antarctica.

- VE3OOG/P is reported to be active from Patriot Hills Base. QSL to K4MZU.
- AT3D operates from India's Maitree Station which is located on Princess Astrid coast. QSL via VU2DVC.
- KC4/KK6KO and KC4/KA6JNF are operating from Palmer station on Anvers island. QSL to home calls.
- CE9MFK is operating from Chile's Yelcho Base on Wiencke Island, one of the islands in the Palmer Archipelago.
- LW8EYZ/Z Claudio is operating from Livingston Island. QSL via LU4EDL.
- HC1JXC/P is operating from Patriot Hills Base (80° S, 80° W). QSL via K4MZU.
- KA7DHE/KC4 is operating from a new base, Central West Antarctic Station (82° 5' S, 118° W).
- ZX0ECF is operating from the Brazilian Base on King George Island. QSL to PY2ASK.
- KC4USB Byron is active from the Byrd Surface Camp (80° 1' S, 119° 32' W). QSL via K4MZU.
- KC4AAG is operating from a new base at Terra Nova Bay.
- DP1KGI is active from Ardley Island. QSL via DD6UAB.
- LZ0A is operating from Livingstone Island. QSL to LZ1R.
- ED0BAE is on Livingstone Island. QSL to K4MZU.
- 8J1RL is active from the Japanese Base in Antarctica. QSL via the Japanese QSL Bureau.

South Georgia — VP8

The VP8SGP activity (*Amateur Radio,* Feb 1995) was cut short by four days. Because of scheduling difficulties, the ship "Abel-J" had to return to the Falkland Islands earlier than planned. The expedition made 18,000 contacts of which 10,000 were on 30, 40 and 80 metres, and 300 on 160 metres. Due to poor propagation and the mountain range around the whaling station, the 17, 15, 12 and 10 metre bands yielded less than 2,000 QSOs. Most of the contacts were made on the South to North axis giving the VK/ZLs a diminished opportunity to work them.

Future DX Activity

- There will be a combined amateur-scientific expedition to Easter Island and Salas y Gomez island between 26 August and 14 Sept. The intended callsigns are XR0Y for Easter Island and XR0Z for Salas y Gomez.

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- A DXpedition is being planned to take place in late April or early May with five operators to Navassa Island. It will be a one week operation with emphasis on the lower bands.
- Special event station 3A2RAR will be active from Monaco during the International Rotary Conference, which will be held in nearby Nice, France, from 10 to 15 June. QSL to 3A2LZ.
- Lou ST2AA is active from Khartoum on the 40, 20 and 17 metre bands. QSL to WB2RAJ.
- Spratly Islands. Bobby DU6BG, President of the Philippine Amateur Radio Association, will be leading an all Philippine team of radio amateurs to activate DU0K on all bands and modes from 10 to 16 April. QSL to DU9RG.
- ET3BT is active from Ethiopia. QSL to Box 6128, Addis Ababa, Ethiopia, Africa.
- Marcel ON4QM will be active for two months from Comoros Islands, D6, as from 20 February.
- ZD8WD will be active from Ascension Island until September. His home call is G4RWD.
- Look for 3W6JP from Vietnam. He is active on 7037, 7078, 14010, 14230, 21010 and 21430 kHz. Home call is JR1TAG.
- Good News. Henri FR5ZQ/G advised me that he intends to return to Glorioso Island for a second expedition during April. Henri is connected with the Meteorological station on Glorioso, and he is a fast QSLer.

Interesting QSOs and QSL Information

E = East, W = West, M = The rest of Australia

- HS0ZBJ — Dale — 14332 — SSB — 1235 — Jan (E). QSL to W8GIO Paul R Vest, Rt 1, Box 140-42, Bunker Hill, WV 25413, USA.
- VQ9TP — Pete — 7010 — CW — 1248 — Jan (E). QSL to N5TP Travis W Pederson, 6 Squirrel Ridge, Wylie, TX 75098, USA.
- S21HQ — Saif — 14320 — SSB — 1242 — Feb (E). QSL to Bangladesh Amateur Radio League, GPO Box 3512, Dakha, Bangladesh.
- EX7MM — Vit — 14036 — CW — 1159 — Feb (E). QSL to DF8WS Wilhelm Schommer, Merscheiderweg 37, D-54662, Speicher, Germany.
- ZL7ZB — Lothar — 14195 — SSB — 0431 — Feb (E). Prefers that cards to be sent via the QSL Bureaus to DJ4ZB.
- FY5GJ — Bruno — 14164 — SSB — 0510 — Feb (E). QSL to F2YT Paul Herbet, 9 Rue de L'Alouette, Estre Cauchy, F-62690, Aubigny en Artois, France.
- OD5JY — Faiz — 14240 — SSB — 0705 — Feb (E). QSL to OE6EEG Dr Selim El-Rifai, PO Box 31, Graz, A-8011, Austria.
- A71BH — Mohamed — 14243 — SSB — 0754 — Feb (E). QSL to OE6EEG as above.
- TA3BU — Bulent — 14243 — SSB — 0602 — Feb (E). QSL via the Bureau.
- SU1SK — Said — 14222 — SSB — 0653 — Feb (E). QSL to Said Kamel Ahmed, PO Box 62, Shobra Al Khima, Cairo, Egypt.
- OH1NOA/OD5 — Tim — 14202 — SSB — 0447 — Feb (E). QSL to OH1MRR, Jarmo Kettunen, Tuomarink 31, SF-28120, Pori, Finland.
- ZP5MAL — Juan — 14195 — SSB — 0345 — Feb (E). QSL to Juan F Duarte Burro, PO Box 34, Asuncion, Paraguay or via the QSL Bureau.

From Here There and Everywhere

- Three German DXers, Joerg DL8WPX, Rudi DJ5CQ and Dietmar DL3DXX were active from Christmas island and Cocos Island during February as VK9XY and VK9CR. On their way back to Germany they were also active from Lord Howe Island as VK9LM. QSLs to DJ5CQ, Rudi Mueller, Alter Main 23, D-96179, Ebing/Bamberg, Germany.
- Some Andorran amateurs used the prefix C37 during the month of March, celebrating the 15th anniversary of the URA, the Andorran Amateur Radio Society.
- Fava Paulo IK2QPR (PO Box 7, 46100 Mantova, Italy) is the QSL manager for YL1XZ, EU6MM, EW6WW, UN2O, UL7OB, RL0O, UL0OB and for the following old calls, UQ1GXZ, UC2WO, UC1WWO, IO2YKV and IZ2YKV.
- Swedish novices now use the SH prefix. The novice licences in Sweden are issued for HF and VHF/UHF activity with the authority to use a maximum power of 100 Watts.
- If you worked Scotty A92Q in Bahrain, he is none other than the Admiral of the US Fleet in the Persian Gulf/Arabian Gulf area.
- The Gaza story continues. The Radio Communications Agency, which is the authority in the UK for the issue of amateur callsigns, has informed the RSGB that it had not authorised the use of the ZC6 prefix which falls within the ITU prefix block allocated to the United Kingdom.
- IR0C is the new contest callsign of IK0AZG.
- The UK is to close down its Faraday Base Ionospheric and Geomagnetic monitoring station in Graham Land, Antarctica. Negotiations are in progress for the hand-over of the station to the new Ukrainian Antarctic Research Centre (UARC).
- According to a Hawaiian newspaper, the Republican Party in the US Congress is advocating the extension of the jurisdiction of the State of Hawaii over Baker and Howland, Jarvis Islands, Palmyra Atoll, Kingmann Reef, Johnston Atoll and Midway Islands. The whole package contains only seven square miles of actual sand, but it would give the State of Hawaii 322,000 more nautical square miles of area. Except Palmyra, which was purchased recently by a private owner, all other areas are under the Federal jurisdiction of the US.
- Sanyi XU7VK (op HA7VK) has a new licence which also allows him to sign the special event sign XU95HA for this year. He can use this new call for contests and special events such as Cambodian and Hungarian celebrations. QSL to HA0HW.
- Tony WA4JQS reports that planning the future Heard Island DXpedition is progressing nicely. Eddie VK4EET/VI0ANT joined the team recently.
- According to some reports, the Tunisian authorities have agreed to allow Omani members of the Royal Omani Amateur Radio Society (ROARS) to operate from Tunisia. This activity might take place during the middle of the year.
- DXers will remember Martin OY7ML. Often he was the only contact from the Faroes Island for many amateurs' DXCC applications. Martin Haasen died after many months of illness on 18 January. He was 67 years old.
- SM0BFJ, QSL manager for Gus 9X/SM5DIC, has reported that the licence of Gus was accepted for DXCC credit.
- Late reports indicate that Bernhard H44MS will try to activate Belep Island/Huon Islands from New Caledonia, FK8.

QSLs Received

VR6FLY (1y op) — FR5ZQ/G (3w op) — 3B8FQ (4w op) — 9J2BO (4w W6ORD) — 4F3AAL (2w AA7AN) — JY8VJ (4m DL1VJ).

Thankyou

Many thanks to all of you who kept me informed, but especially to VK1FF, VK2KAA, VK2KCP, VK2KFU, VK4CY, VK4MZ, VK4XW, VK9NS and FK8GM, and the publications *QRZ DX, The DX Bulletin* and the *DX News Sheet*.

73 and Good DX

*PO Box 93, Dural NSW 2158

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Club Corner

Radio Amateurs Old Timers Club

Broadcasts

Broadcasts from April to September will revert to EAST **EXCEPT** that the two morning transmissions on 14.150 MHz will remain on the same UTC times all year, that is 0000 and 0100 hours.

50 Years Ago

We are asking the Federal Council of the WIA, through the VK3 Division Council, to consider marking the 50th anniversary of the return of amateur operating rights in November 1945 after the World War II war time ban. A special prefix perhaps?

We currently hold proof of several QSOs in VK3 in December 1945 and would very much like to hear of similar early QSOs in other states.

Allan Doble VK3AMD

Did You Know This Man?

Wanted! All past Scouts from Woodford (QLD), especially those who knew Alf "Fox" Chappel.

Woodford, about 70 km north west of Brisbane, is a small Stanley River valley town surrounded by timber stands, and the fruit and dairy farms of the district's predominant industries.

Alf Chappel arrived in this area from England as a six year old in 1912 with his parents and twin brother Harry. His death in July 1994 lost this community a much valued and respected citizen. His friends are well aware of his many contributions during 82 years of local involvement. High on this list was starting 1st Woodford Scouts forty years ago and subsequently continuing as Scout Master for 13 years.

Many men who hiked, camped and were taught scouting skills by "Fox" Chappel during those years, will want to mark Sunday, 7 May 1995 in their diaries. On this day, beginning at 10.30 am, Woodford Scout Group will be commemorating the commencement of Scouting.

Information about this event is available from Group Leader Jim Johnson (074 965 130).

Alf Chappel's son, Fred VK4DY, has obtained the callsign VI4FOX from 29 April to 14 May. Several operators will use it on most bands, and a station will be set up at the Woodford Scout Hut on 7 May. An award will be given to all who work VI4FOX and send an SAE to PO Box 17, Woodford QLD 4514.

Fred Chappel VK4DY

Sunraysia Radio Group Inc

The Sunraysia Radio Group Inc, in conjunction with the Riverland Radio Group, are conducting a joint, two states radio/craft exhibition in Mildura on 20 May 1995.

They would like to extend an invitation to attend and/or participate to all interested persons.

The venue will be the Chaffey Secondary College Assembly Hall in Deakin Avenue, Mildura, between 13th and 14th Streets, and the event will run from 1030 to 1600 hours.

For further information, please contact Debra Mahy at PO Box 76, Mildura, VIC 3502

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Stolen Equipment

The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.

Make:	ICOM
Model:	IC2G XAT
Serial Number:	001990
Type:	Handheld transceiver
Accessories:	Carry case and speaker mic
Stolen from:	Home QTH
Date:	15 February 1995
Owner:	James Jessiman
Callsign:	VK2MLV
Contact details:	60 Coleman Street, Wagga (069) 251 060 (AH) (069) 217 475 (BH)

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ATN ANTENNAS P/L

A.C.N. 062 557 644

56 Campbell St, Birchip Vic 3483
Phone: (054) 92 2224
Fax: (054) 92 2666.

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- Rotators by Create, coax cables & phillystran guy/halyard materials.
- B&W all frequencies 1.8-30MHz end fed vee. All frequencies 3.5-30MHz folded dipole. 10W, 100W, 1kW. No radials required.
- Hard-drawn copper antenna wire and insulators.
- Diamond 80-40 & 80-10 dipoles and accessories.
- High gain VHF & UHF amateur, scanning & TV antennas.
- Butt section triangular aluminium towers for fixed or tilt-over applications.
- Selections of power chips and TX. Also Hazer tubes.
- VSWR/PWR meters by Diamond to 1300MHz 10 models. All in stock.

Education Notes

Brenda M Edmonds VK3KT Federal Education Coordinator.*

Some time ago, I promised that I would write about the Morse code examinations. I have been asked about the actual speeds of the characters at each level, and the style of code sent. Many computer programs have been devised to convert text into Morse code for practice, and some candidates seek to be able to set their programs to equate to the examination standards.

As the examinations stand at present, both levels are sent with the characters at a speed slightly above the nominal rate and the spaces lengthened to compensate, ie, for 10 wpm receiving, the individual letters are sent at a speed of 12 wpm, but the message contains only the equivalent of 50 words of 5 letters each. (Of course you know that each number counts as two letters). For the 5 wpm, the characters are sent at 7 wpm, with a total of 25 words or 125 characters.

The tone used is approximately 800 Hz, which is a higher pitch than the old DoTC used, but which has proved to be more acceptable to candidates and examiners.

Different letters require different times to send, eg J and Y are very long, B, M and G are medium length and E, I and T are very short. Therefore, a representative text must contain a fair distribution of all letters. In the past this was done by writing the text, then modifying it by using words with longer or shorter letters, more or less on a trial and error basis.

In approving texts for use for receiving examinations, the DoTC accepted a time discrepancy of a couple of seconds either way, and approved some AOCP texts which did not contain a sample of every letter of the alphabet. Naturally, it is harder to get all the letters into a 5 wpm test than into a 10 wpm test, but the aim is to have all if possible, but without an unnatural emphasis on letters such as Q and Z.

To return to the computer programs, I have very little direct experience with any of them. I know from hearsay that they vary considerably. But I would caution against being too strict in adhering to the standard set for the examinations. To my mind, candidates are better prepared if they learn to receive a variety of styles and under a range of conditions. Those who have listened and learnt from on-air contacts, or have used the various CW training broadcasts and tapes, will be less likely to be upset if the examination does not sound exactly as expected.

The best way to learn Morse code is to learn the letters, then listen to as much as possible. Read it good or bad, through atmospherics, through fades, at high or low pitch, in plain language or QSOs, at any speed up to just above the examination speed. If it is too fast, just copy occasional letters. Learn to let a missed letter go, but most importantly, listen, listen and listen some more. A few minutes every day is better than an hour once a week. The sending examination is a breeze if you are confident of the receiving. Good luck!

**PO Box 445, Blackburn VIC 3130*

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Over to You — Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Packet Radio Band Plans?

There was an announcement on page 35 of *Amateur Radio,* February 1995 issue, headed *Packet Radio Band Plans.* The article states *Agreement has been reached on the proposed changes to the packet radio band plan for two metres and 70 cm.* The supposed agreement is about removing nine voice or general use channels and giving them to the **EXCLUSIVE** use of data packet radio.

The band segment concerned is from 145.000 to 145.200 MHz. Currently several operators regularly use this segment with FM phone and CW. They will be excluded from continuing operations in this segment of two metres because of the overbearing nature of packet radio audio.

To say these operators have agreed to losing operating channels would be incorrect because they probably have not been made aware the changes will occur. When they are informed (being too late to object) they will probably realise that Band Plan Officials (whoever they are) made an "agreement". This would comply with constitutional provisions of the WIA (or does it?).

So, being "good hams", they will probably QSY to what is left of the band for their operations — until the new "whiz bang data mode" is invented and requires more band space.

Now for some suggestions:

1. Proposed band plan changes be gazetted in the journal (and other publications) before agreement has been reached.
2. Proposals be put on the WIA broadcast to inform all operators (WIA members or not) that a decision is about to be made which will change operating conditions for **ALL** amateurs.
3. To give **ALL** amateurs some input to the "agreement" a referendum sheet could be produced with Band Plan proposals on it. Interested amateurs could then mark their opinion on the sheet. They might even add suggestions if they are concerned enough.
4. What about 12.5 kHz channel spacing in the data segment? If practical in operation this may mean the packet allocation would not have to be expanded.
5. Could the 144.600 to 144.700 MHz segment be utilised for packet instead of 145.000 to 145.200 MHz?

John Smedley VK5AJS
54 Fulham Park Drive
Lockleys SA 5031

(There has been a need for extra packet channels in most states for some time. Proposals from the SA Technical Advisory Committee and from FTAC were circulated to all Divisions last November and were announced in Amateur Radio. *No objections were received so it was assumed that affected groups in each state had been consulted and had agreed with the proposal.*

There should have been more time for consultation but a decision had to be made quickly so that the extra channels could be included in our Novice licence condition submission to the SMA.

I regret the clashes, especially as the idea of band plans is to avoid clashes rather than to cause them. However, there is already packet activity above 145 MHz in several states and more than three extra channels are needed, so there is no alternative to going above 145 MHz.

The three channels below 144.700 MHz were avoided because the 144.6/145.2 segments are the only possible option for future linear translators.

There are no plans for any more major changes and the band plan now precludes any further expansion of the two metre data segment beyond the 144.7 — 145.2 MHz limits.

John Martin VK3KWA
(Chairman, Federal Technical Advisory Committee)

SMA Actions

I found the February issue of *Amateur Radio* most interesting, especially the items regarding proposed fee increases. I obtained an extra copy and delivered it to the office of a local Parliamentarian, Senator R Alston, Shadow Minister for Communications and Arts. I highlighted the various articles about the proposed increases and amateur feeling about it. Hopefully, he might find time to read them!

I was also rather puzzled by the *WIA News* item on page 56 regarding the 80 Metre DX window and the SMA's consideration of withdrawing the window due to the conduct of a small group of amateurs. Surely a letter of warning to these persons, and further action should they persist in their alleged misconduct, would be more appropriate than to punish others who are "doing the right thing"?

Lindsay I LaPouple VK3DXH
2/172 Moray Street
South Melbourne, VIC 3205

Morse Exams

Regarding the letter from Quintin Foster L30720 about using his own key and having time to do a little practice before the Morse exam. This is not peculiar to the present exam system. When I sat for my Novice and Full call Morse exams in the early 80s I found the RIs and others in charge of the exams most friendly and helpful.

Ample time was given before the sending exam to have a practice. In fact, I was given a paper with practice messages, typical of what one could expect to send in the test, and was advised I could have used my own key.

Before the receiving tests, again there was every consideration given to set one at ease. Volume and pitch of the transmission was played to see it suited all, and a practice message was played and written in the rear of the book provided. After a short pause the actual test message was played.

Throughout the exams I felt the examiners had a very friendly attitude of "we are there to help you pass". Not, of course, by giving away anything relating to the actual exams, but by their willingness to help and answer any queries.

Lindsay I LaPouple VK3DXH
2/172 Moray Street
South Melbourne, VIC 3205

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Tell the advertiser you saw it in the WIA Amateur Radio Magazine.

Spotlight on SWLing

*Robin L Harwood VK7RH**

A quarter of the year has already gone and it is Easter, the high point of the Christian calendar. Whereas here in the southern hemisphere it means that the winter chills are not far away, in the northern hemisphere spring has arrived. Propagation also is changing over from summer to winter here and I am already noticing the higher frequencies are not propagating in the evening hours. Signals are more noticeable in the daylight hours and broadcasts to the Americas in their evening hours, as well as the early morning European releases, come in without any problems.

The regionalisation of the BBC World Service is also expected to commence in April and may have already commenced when Europe went onto Daylight Time on 26 March. Modifications to the format may have been made following listener concerns. Listen in to "Waveguide" at 1030 UTC Saturdays on 9740 or 12095 kHz for more details.

Radio Canada International in Montreal celebrated its 50th anniversary on 25 February, yet its continued existence is still up in the air as the CBC, its parent organisation, has to trim another 7,000 from the staff, including RCI. As I have mentioned previously, the RCI senders in Sackville, NB are utilised more by other international broadcasters than RCI, eg BBC, DW, Austria Radio International, Radio Japan and Radio Korea, etc. RCI also uses sites in Japan, Korea and Austria. Sites in China are in use but the Chinese don't have reciprocal facilities at Sackville.

In mid-February, signals from Asia were observed on lower frequencies at 0200 to 0300 UTC. I was copying several CW marker signals from Indonesian stations in the 8 MHz maritime allocation. 9VG in Singapore was also monitored on both SITOR and CW. Also, there were many SSB networks observed between 7 and 10 MHz. Signals were about S 2-3 and were copiable due to a low-level noise threshold and the absence of any European signals. RRI Ujung Padang on the unusual split frequency of 9552.5 was at S 7 and the modulation was good. I noticed "Channel Africa" was also there but just at the threshold on 9580 kHz. The signal would suddenly jump up to S 6 for about five seconds before slipping back to the threshold. This was at 0330z. Incidentally, Johannesburg was in English. European signals re-appeared at 0400z and this Asian-African path closed.

One of America's experienced DX Clubs suddenly ceased operating in February. "SPEEDX" published a monthly bulletin both in print and electronically on the Internet. No reasons were given other than financial. I know a replacement e-mail utility facility is running on rec.radio.shortwave, but I think the bulletin is separate from that echo.

Another DX club is now operational in Australasia, known as "The South Pacific Union of DXers" or SPUD. It is not affiliated to any existing club or organisation and is made up of experienced DXers who are rather disillusioned with the scene. I don't, unfortunately, have their PO Box No but I am sure you can get in contact with them through either Paul Newton or Dave Onley at the Radio-Active BBS in Melbourne or the Shortwave Possums BBS in Sydney.

I am experiencing a little difficulty with my e-mail facility. My Internet provider has switched to UNIX from Waffle and I am having some difficulty in downloading stuff over the phone lines. As well, my Fidonet node has somehow lost the rec.radio.shortwave echo. It looks as if the Internet/Fidonet gateway has problems and it may have been fixed up by the time you read this. I like the latter because it allows me to send/receive mail offline which my Internet provider doesn't have, yet it does store it at the BBS for perusal later. If only I could sort out these minor hassles, I would be much happier. Don't forget there is always the snail mail route!

Well, that is all for April. Until next time, the very best for Easter and good listening!

**52 Connaught Crescent, West Launceston TAS 7250*
VK7RH@VK7BBS LTN.TAS.AUS.OC
Internet: robroy @clarie.apana.org.au
Fidonet : Robin.Harwood 3:670/301@fidonet.org

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QSP News

1994 Annual Reports

The usual practice of publishing WIA Annual Reports in this issue of *Amateur Radio* will not be adopted this year. Instead, all reports will be published after adoption at the Annual General Meeting on 29th/30th April and, therefore, should appear in the June edition of *Amateur Radio.*

An Old Timer Reflects....

Des Greenham VK3CO (SK) continues to look back over 50 years of amateur radio operation.

When it came to antennas it was hard to beat the "End Fed Zepp" - this was the thinking when we resumed operation after the war (WW2). We worked lots of DX and could contact stations all over Melbourne. Then, one day in 1946, I was called by Alf VK3VJ who lived near Mentone on the southern side of Melbourne. His signal was very strong and he told me he was using a new antenna, a "Yagi Beam"!! I had not heard of this before and, from the strength of his signal, judged it must be a good antenna.

After our contact I decided to visit Alf and see what this antenna looked like. After a short trip on the old Triumph motorbike, I arrived at Alf's QTH. Here was this weird antenna perched on top of a length of water pipe. It could be rotated with a wrench and a strong arm.

We did some tests and, after contacting a station in USA, it was obvious the gain was really there. This thing really worked! Alf's beam was made with steel split electrical conduit. This was mounted on a wooden boom and mounted atop a length of water pipe...and it worked!

Returning home, I was determined to have a beam. So, after consultation with my father, a construction expert, we decided to erect a mast. It would be 40 ft (12 m) high and made of wood. We purchased a large quantity of ex army tent poles for 30 shillings per dozen. They were about 2 metres long, 50 mm diameter and made of top quality dressed hardwood. These were drilled and pins fitted so they could be fitted end to end. The mast was 12 inches (30 cm) square and guyed at 3 points.

A permit was obtained from the local Council to construct this structure, the cost being one shilling per foot above 25 ft. The "once only" fee was 15 shillings and this was willingly paid. The 3 element beam was constructed using aluminium tubing. This was "obtained" from a secret source and mounted on a wooden pine boom. The beam was checked and tuned on the ground and finally hauled to the top and mounted on a rotatable pipe. The whole thing being rotated by a series of cables down to a wheel in the shack.

From this beam, one of the earliest in Melbourne after the war, many countries were worked. In 1953 I moved to the country and the tower was finally demolished in 1955. Only recently some of the original tent poles were located. Still in good condition, they are being used to stake tomatoes in my mother's garden. Humiliation!

ps — Mum will be 96 this year.

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Repeater Link

*Will McGhie VK6UU**

Notches

My thanks to Trevor VK8CO who, during a phone call about the joys of 2 metre duplexers, mentioned that I had yet to produce the promised conversion details for the Philips E band transceiver to six metres. I was sure that I had but, on checking, found that Trevor was right. Only a brief mention on the receiver conversion was made in the February 1994 edition of *Amateur Radio*.

Trevor also rang to let me know about a modification to the two metre cavity filter to produce an easier and more stable notch. Trevor is involved with WICEN and has had trouble with cavity duplexers moving frequency when transported. The modification is to only use one coupling loop that is series tuned with a capacitor. The coupling loop is made up of an inductance (the loop) and a series capacitor. The cavity filter is "T" connected into the coax feed and produces a notch that is deeper than the normal "T" cavity filter without the series capacitor. The addition of this series capacitor in the coupling loop also allows for easy adjustment of the pass to notch relationship. As soon as Trevor is happy with the finished duplexer, hopefully I can bring you the results.

E Band Conversion

The Philips E band FM transceivers are going for a song these days and can be converted to six metres fairly easily. However, unlike the A and B band that only require a retune to put them on two metres, the E band does require some component changes. The frequency shift, from the 68 to 88 MHz band down to six metres, is a considerable move and several capacitors need increasing in value. One point to make is that there are several ways to convert these radios down to six metres. I have had feedback from several amateurs and have pooled the ideas that follow.

Receiver

The receiver conversion is straight forward. Add 8.2 pF to each of the four front end tuned circuits to ground. These tuned circuits are found in the two large tin boxes, two coils in each. You will have to remove the top cover off each box by de-soldering the lids. Once inside, add an 8.2 pF capacitor from the hot end of each coil to ground. This is best done from the tuning capacitor to ground. Next add a ferrite slug to each of the coil formers in the local oscillator multiplier tin box. Likewise, you will have to de-solder the top lid.

I obtained the slugs from the unused multi channel oscillator board. If your 828 does not have the optional extra 7 channel board then you will have to find another source of slugs. Another option is to use the slugs from unused oscillators on the main receiver and exciter board, if only one channel is to be installed. If all this fails then add capacitance across the multiplier coils. I'm not sure how much but about 10 pF would be a good start. The receiver should now tune down to six metres.

Exciter

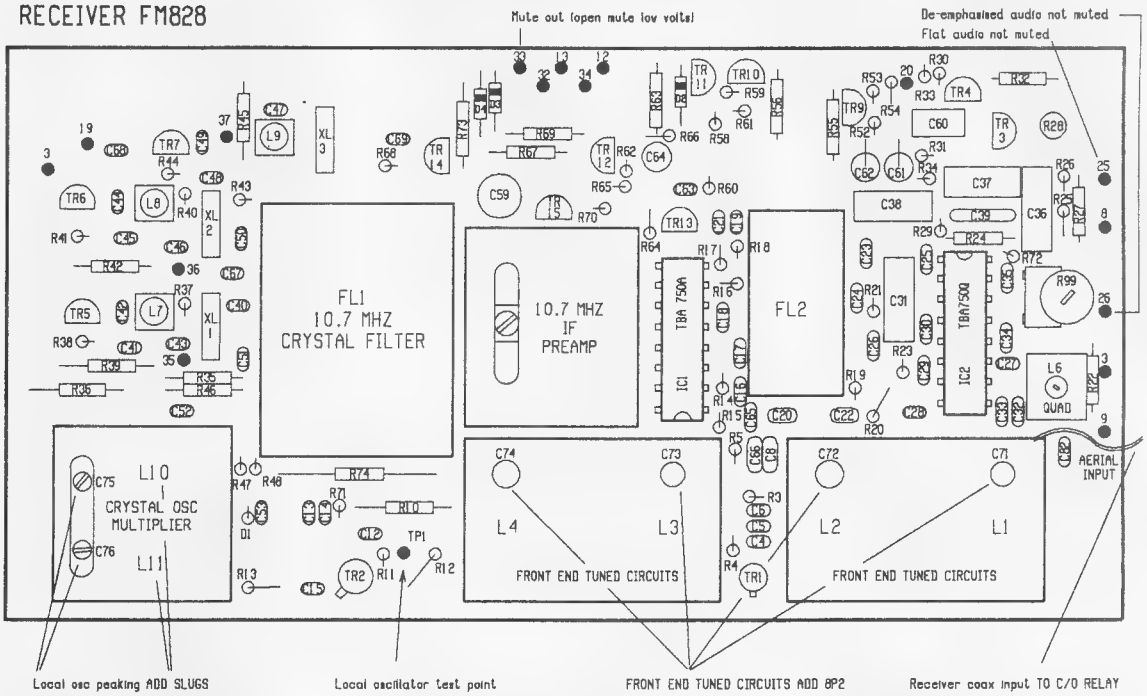
The exciter requires more modifications than the receiver board but usually only increasing capacitor values.

Crystal Oscillator

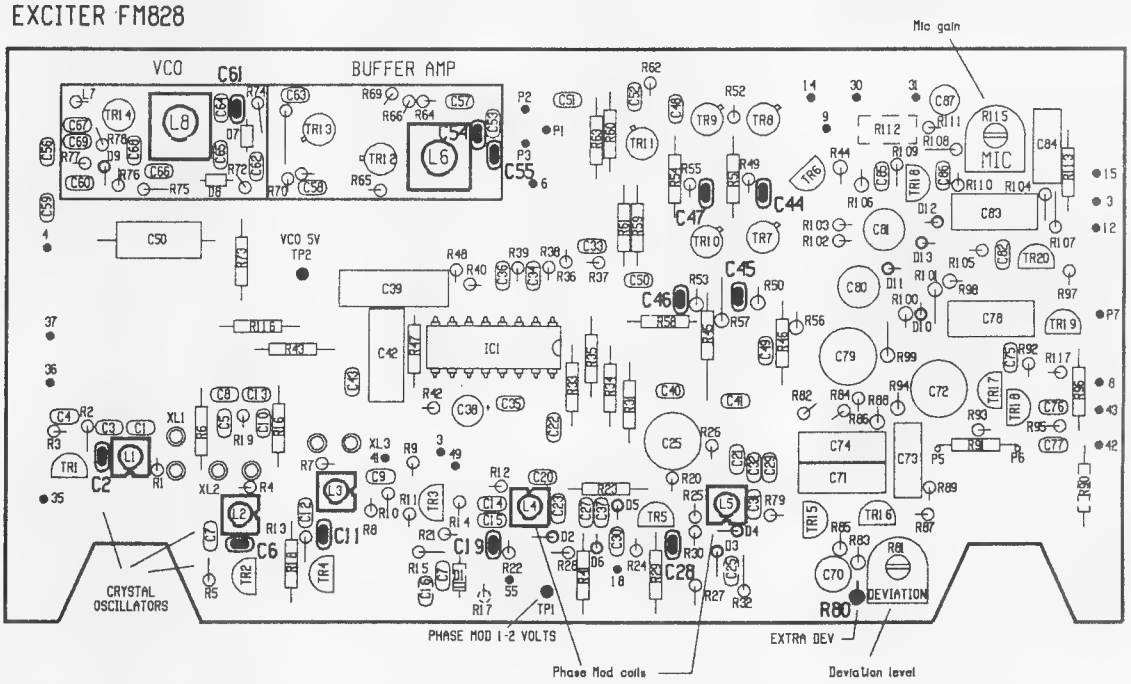
This was the area I had the most difficulty with, making the reference crystal oscillate, and oscillate on the right frequency. I managed to have the 828 producing 25 watts on somewhere around 56 MHz. It is possible for the crystal to oscillate on its parallel resonance point rather than the series resonance point. The frequency is different, so be sure to check that the oscillator, once going, is on the correct frequency. However, this was in the development phase and, with the components shown, you should not have this problem.

The real problem with the crystal oscillator circuit is that the series netting inductor requires more turns. You can have a go at adding turns if you like, but the wire is very thin and it is most frustrating and time consuming. It is easier to add C and fool the circuit into working at the lower frequency. L1, L2 and

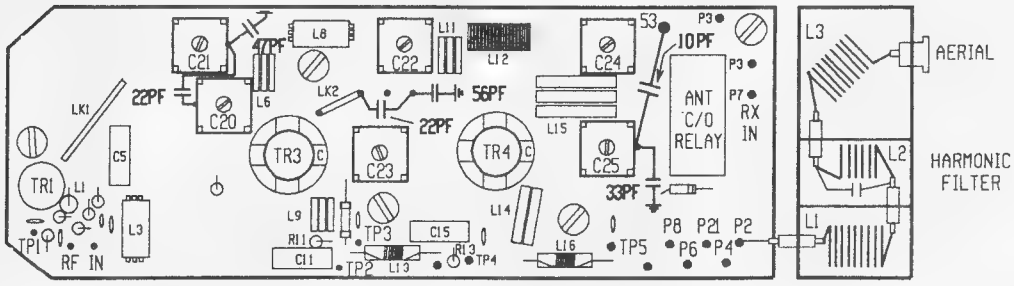
RECEIVER FM828



EXCITER FM828



POWER AMPLIFIER FM828 E BAND



L3 are the on-board netting coils for each of the three transmit crystal channels. If you are adding only one channel then you need only modify one of the oscillators.

Increase C2, C6 & C11 (100 pF) to 390 pF either by paralleling 270 pF, or replacing one or all of these capacitors with 390 pF. If the crystal oscillator won't run after this modification add 22 pF across L1, L2 and L3. If still no go, replace the 680 Ω resistor across the crystal with a 1.5 kΩ. Hopefully, only the first modification will be required.

Check the crystal is oscillating on its correct series resonant frequency.

Phase Modulator

L4 and L5 need 39 pF added across each or replace with a 68 pF for each. I found this value resonated the phase modulator coils but some amateurs have had to use higher values up to 82 pF.

Divider

C45 and C46 need increasing from 47 pF to 100 pF. Either add 47 pF or replace with 100 pF. C44 and C47 need increasing from 33 pF to 47 pF.

Tuned Amp

Increase C54 from 1.8 pF to 4.7 pF. Increase C55 from 8.2 pF to 15 pF. Increase C61 from 6.8 pF to 18 pF. L6 may require a few pF across it to resonate but, in my case, it did not.

VCO

Place 3.3 pF to 6.8 pF across L8. Try the lower value first.

Power Amplifier

Across all these trimmer capacitors add the following values of ceramic capacitors:

C20 add 22 pF
C21 add 47 pF
C22 add 22 pF
C23 add 56 pF
C25 add 33 pF
C24 add 10 pF

All these capacitors can be added from the top (component) side of the PA board. It may take a multimeter and a bit of time to work out where the easiest point is to solder the capacitors in circuit. Consult the PA layout diagram.

Harmonic Filter

This modification is the most important. The E band FM 828 is designed to transmit up to 88 MHz. The transmitter output harmonic filter has no attenuation up to this frequency and above. The filter does not introduce any significant attenuation until well above 110 MHz. If your 828 is transmitting on 53 MHz then the second harmonic is 106 MHz. At this frequency the harmonic filter only offers a few dB of attenuation. The result of this is that your second harmonic will only be about 40 dB down at its best. Not good. The second harmonic should be better than 60 dB down. To modify the output harmonic filter add 2 turns to L1, add 1 turn to L2 and add 2 turns to L3.

Drawings

You may find the board layout drawings of the 828 hard to read but, with space at a premium in *Amateur Radio,* I have placed them all on one page rather than each board to its own page. These drawings have been re-drawn onto computer using *Draft Choice* and may have an error or two. Also, your version of the 828 may be slightly different as there are several versions. The receiver and exciter boards of the 828 are the same for the A, B and E bands, with only a few component changes. Philips were able to produce a VHF receiver and exciter that covered from 60 MHz to 180 MHz with the same basic layout and components, requiring few changes for each specific band.

Where it has been possible, I have shown the circuit changes required for six metre conversion in thicker line. This may not reproduce too well but short of colour it was all I could do. Note also the capacitor changes are shown darkened in on the exciter board and the text relating to their component number is enlarged.

Hopefully, you will find the component layout useful for the 828 A, B and E band. The PA for the A and B band has an extra transistor in its line up designated TR2. Note that the three transistors in the E band PA are called TR1, TR3 and TR4. There is no TR2. Philips used the same component designation for all components between the A, B and E bands. In the E band PA less amplification was required and TR2 was removed. Wonder if there was ever a C band?

If you want a larger layout drawing or, better still, a copy of the CAD drawings, contact me. The CAD drawings can also be sent to you via Packet Radio.

One final point. You may find the Tx deviation on the low side, even with the deviation control (R81) flat out. Try reducing the value of R80 from 180 to, say, 100 Ω or less.

If you notice any errors, or know of a better way of placing an E band on six metres, please let me know so I can update my information.

Tune Up

Tune up of the E band to six metres will have to wait till next month due to the amount of space already taken up. In brief, though, the exciter is the most difficult. Tune L4 and L5 for maximum on TP1 and L8 for 5 volts at TP2. Once the exciter is locked and the Tx LED lights there should be some power output on six metres.

29 MHz

I have received a reply from John Martin VK3KWA, the Chairman of FTAC, regarding 29 MHz simplex gateways. John's comment was that a simplex gateway can be placed on an existing repeater, provided the 29 MHz gateway is in the WIA 29 MHz repeater sub band between 29.5 MHz to 29.7 MHz. Also, the 29 MHz repeater frequency must not link to another gateway on the same frequency. Our application to the SMA has been submitted to place a 29 MHz gateway on an existing 2 metre repeater. The frequency is 29.680 MHz simplex. This frequency has been allocated to VK6 for a 29 MHz repeater that is yet to see the light of day.

Next month I should be able to comment on the new regulations as they relate to repeaters.

*21 Waterloo Crescent, Lesmurdie 6076
VK6UU @ VK6BBS

BT

WIA News

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of February 95.

L20990	MR W LUCAS
VK2APA	MR A T PUNCH
VK2ARM	MR R A MANIERI
VK2ATP	MR K E PETERS
VK2GCT	MR C TSOUTIS
VK2SNS	MR N S STEELE
VK3KPK	MR P K KATZ
VK5NWH	MR W R HOLMAN
VK6AMD	MR R SPENCER
VK6KPW	MR P D WATTS
VK6MQ	MR R J MCCORMICK
VK6VW	MR P D SORRELL
VK7DG	MR D G BARNES
VK7JRM	MR R J MCKENZIE
VK7ZEH	MR E A H HARRISS
VK7ZTW	MR J V GILES-CLARK

Pounding Brass

*Stephen P Smith VK2SPS**

It's been some time now since this column has reviewed the most up-to-date publications relating to telegraphy. In the months to come, I hope to include for you the current listing of available books, where they can be obtained, and at what cost. Sadly most of these fine reference books are not yet available in this country. I can only hope that retailers of amateur related products, especially in the sale of books, can improve on what little they have. Only time will tell.

Over the last few months I have corresponded with several American authors and have been very fortunate to have been lent some fine reference books for review. One such book, which I found to be most informative, is called "J-Series Telegraph Keys of the US Army Signal Corps". This well put together book was produced by Larry Nutting. Being a collector of keys myself this fine book has identified a number of markings on my J-36 and J-38 keys that have eluded me for some time. Most of the material has been compiled from military signal corps catalogues. Military terminology is used throughout the book with cross reference listings from BC and SCR numbers being included.

The standard format is as follows:

J-5-A	*(1945) Stock No 3Z3405A.*
Descrip:	*Key Telegraph: Sig C Key J-5-A; Flameproof.*
Overall:	*5-1/8" lg x 2-5/8" wd x 2-3/4" h.*
Base:	*Phenolic base 2-5/8" x 3-1/8"; 3#6-32 mtg screws extend through base.*
Lever:	*Black nickel finish lever.*
Contacts:	*Two silver cont, 1/4" dia.*
Knob:	*Navy type.*
Spec:	*US Army Spec # 71-377; Sig C DWG #RL-D-103.*
Use:	*For use in airplanes; P/O Radio Set SCR-134 (BC-114) and SCR-135 (BC-114)*
Mfrs:	*L.S Branch MFA CO, Western Electric Co*

From the above you can see that a lot of research has gone into this publication. The book has a soft cover, measures 8-1/2" x 11", and costs $US12.00 Airmail. Further enquires can be made to Larry Nutting, 4025 Slate Ct, Santa Rosa, CA 95405 USA.

I would highly recommend this book to collectors of military "J" keys. Further book reviews will appear in later issues.

I've been in contact with Ed Wetherhold W3NQN, ARRL Technical Adviser, in relation to his **Passive LC Filter** which he has been working on for the last couple of years.

He informed me his earlier designs incorporated two stacks of surplus 88 mH inductors and one surplus 44 mH inductor. This configuration worked fine but was too heavy to ship overseas to those wishing to assemble his filter. The filter configuration was changed and the 44 mH inductors, which are no longer available, were dispensed with. Instead, bifilar-wound 88 mH toroidal inductors, which you modify to the design inductance by removing turn pairs, have now been included.

His present design includes *"one stack of five series-connected inductors and two shunt inductors".* For centre frequencies of 537, 750 and 800 Hz, the two shunt inductors range from 88 mH to 38.1 mH. Inductances less than 88 mH are obtained by removing turn pairs from the two bifilar-wound inductors as mentioned above.

Ed advises me he has sufficient inductors for perhaps another two or three hundred kits. After that, no more.

Most parts can be obtained here, except for the bifilar-wound inductors which he purchases direct from the C & P Telephone Company. Most transceivers use a sidetone frequency of either 750 or 800 Hz. Ed can provide a single cap set suitable for both 750 and 800 Hz sidetone frequencies or a cap set for 537 Hz design.

Here is a current (November 94) price list of parts used in the CW Filter Assembly:

(1) Inductor set (88 mH Stack and two bifi-wound 88 mH inductors): No charge
(2) One mounting clip for the inductor stack: $0.50
(3) Two matching transformers, 8/200 CT, 2 W: $3.00
(4) One matched capacitor set for F-centre = 750/800 Hz: $5.00
(5) One phone jack, 1/4" mono: $0.50
(6) One phone plug, 1/4" mono, with 33" cable: $0.50
(7) DPDT toggle switch, with wide blade lever: $0.50
(8) 10 or 12 Ω resistor for RI and insulated wire for filter assembly: No charge
(9) Pre-punched plastic box with bumpons for box bottoms: $5.50
(10) Packing & Surface Shipping to Australia: $9.50

Total cost for one CW Filter Kit: $25.00

(The inductor set is provided free through the courtesy of the C & P Telephone Company. Ed also mentions that if there are any parts in the above list you do not require, please specify to reduce the overall cost.

Further enquires can be made to Ed Wetherhold, 1426 Catlyn Place, Annapolis, MD 21401 USA (Phone 410 2680916)

The above prices are subject to change.

Next month I will continue with the five resonator CW filter. I have made enquires with Australian manufacturers as to the possibility of getting some inductors made up for fellow amateurs. I will report my findings at a later date.

*PO Box 361, Mona Vale NSW 2103

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Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

L Network Matching Design — A Reply

Tim Hunt (*Amateur Radio* November '94) in his comment about my Feb '94 "technical point" suggests that my reference to Power Factor (PF) is off the track. What he really means is that I am not following his track. I won't be following Tim because I believe he is on the wrong track.

The Power Factor of a reactive circuit or circuit element is not close to unity, it is close to zero. If the element is pure reactance, the PF is zero. The power factor of a pure resistor is unity.

Power Factor gives useful information about load characteristics at all frequencies. The meaning is nicely summarised by the equation PF = Cos θ where θ is the angle of the lead or lag of the supply current with respect to supply EMF.

Tim might be confusing PF with other terms and definitions, which have similar applications. PF is used to indicate the probable loss in capacitors and dielectrics but some authorities prefer "loss angle" and/or "dissipation factor" for that purpose. Loss angle is ($\frac{1}{2}\pi$-θ) expressed in radians. The tangent of the loss angle is the dissipation factor. If θ, (in radians), loss angle (in radians) and dissipation factor are less than 0.1 they are taken to be equal. Good dielectrics and insulators have PF of 0.0006 at 1 MHz.

Power Factor is also the ratio of energy consumed to energy supplied, (Watts/Volt Amps). If the PF is less than unity, not all supplied energy is consumed. Some is transferred from the source to the load and back again and serves no useful purpose. The energy returned (reflected in amateur jargon) can cause destructive currents and voltages in source components, and amateur solid state transmitters include PF sensing circuits which reduce drive when the PF departs from unity. Some shut down the transmitter when the PF is less than 0.75 (SWR greater than 3).

In a transmitting antenna system, the energy consumed is converted to electromagnetic radiation and to conductor heating. The ratio of energy radiated to energy consumed is the antenna efficiency. A major design, or trial and error objective is to adjust the total system (Tx to antenna) for a power factor of unity and an efficiency approaching unity.

I consider the section of Tim's letter about L section matching is also on the wrong track. I have sent Tim a hand written response and copies of this are available for other interested readers on receipt of a SAE. In the meantime, I suggest an attempt at a general analysis, using the reactance coupled mesh approach suggested in my July '94 Technical Correspondence, is worthwhile.

Lindsay Lawless VK3ANJ
Box 670
Lakes Entrance VIC 3909

L Matching Network Design — A Follow Up

There were a couple of ambiguities and at least one error in my *Technical Correspondence* (November '94). When writing this, I did not fully appreciate the significance of Lindsay Lawless's "technical point" of February '94, until he clarified this in a letter to me. Lindsay has used the Power Engineering concept of "power factor" in an RF engineering application. He has also separated two logical functions performed by the L match, those of load reactance cancellation, which he calls "power factor" correction, and resistive source/load impedance transformation.

Both are perfectly valid but required, I believe, more explanation than given in his original article.

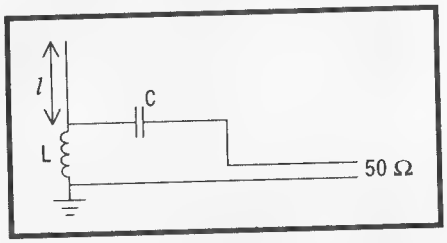
Power factor correction, in (high current) Power Engineering applications, is applied between the transmission line ("source") from the AC power generator and the plant equipment ("load") to enable this equipment to operate at specified load conditions with minimum loss in both transmission line and plant equipment. This correction network, in its simplest form, achieves a near resistive load to the transmission line through reactance cancellation.

More complex networks can perform both impedance transformation and reactance cancellation functions.

In my correspondence, I was referring to the power factor of the load (antenna + transmission line up to the matching network junction) being very close to 1. The power factor correction network, which I had assumed to be the entire L match, is then placed between the source and the load. The power factor of the reactive element is then obviously very close to 0. Lindsay has separated this network into its two logical functions, resistive impedance transformation and load reactance cancellation (which he calls power factor correction). If I were to use power factor in this context, the power factor correction network would be the entire L match because it facilitates the maximum transfer of power to the load (antenna + transmission line).

In the fifth paragraph of my correspondence, the "<" sign was not printed. It should read "(length l < λ/4)".

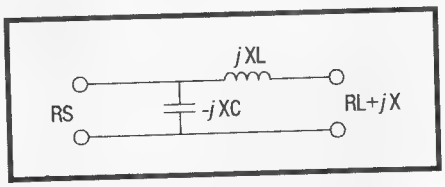
In figure 3, the network has been drawn incorrectly. It should be:-



I have assumed, incidentally, that the real part of the input impedance of the system (R) is less than 50 ohms in Figure 2 and greater than 50 ohms in Figure 3.

The L and C in Figure 4 refer to parameters associated with antenna reactance, for the two special cases discussed, and not of the associated matching network, as the caption below it indicated.

The L matching network, in one of its forms, can transform a range of loads containing both reactance and resistance to a source resistance (usually 50 ohms). This latter statement should not be open to controversy because the conditions under which such a transformation is possible can be specified precisely and be easily verified.



Where $XL=2\pi fL$ and $XC=1/2\pi fC$.
For instance, if RS > RL and ZL=RL + jX then:-
C (capacitive reactance of C in L network) = $RS\sqrt{RL/(RS-RL)}$
XL (inductive reactance of L in L network) = $\sqrt{RL(RS-RL)-X}$
where $-\infty < X < \sqrt{RL(RS-RL)}$.

Such a network can cope with any level of capacitive reactance and an inductive reactance bounded by $\sqrt{RL(RS-RL)}$. An analogous set of design equations and conditions can be specified when RS < RL.

Tim Hunt VK3IM
20 Ravenscourt Crescent
Mt Eliza VIC 3930

VHF/UHF — An Expanding World

*Eric Jamieson VK5LP**

All times are UTC.

Six Metres Standings List

I said that the list published last August was the final one for the Standings List. However, in my haste to complete the August notes, due to a looming hospital admission, I missed updating the entries of VK3LK and VK5RO, so I need to repeat the list once more to include them. As my columns lately have been rather full with other information, this is the first opportunity I have had to make the amendments.

Column 1: 50/52 MHz two-way confirmed contacts
Column 2: 50/52 MHz two-way claimed as worked but not confirmed
Column 3: Countries heard on 50/52 MHz

CALL-SIGN	1	2	3
VK3OT	100	102	
VK4KK	93	93	4
VK4BRG	86	90	
VK2QF	85	85	3
VK2BA	69	69	
VK4ALM	68	70	
VK4ZAL	68	68	
VK2BBR	54	64	
VK4JSR	53	56	8
VK4TL	51	54	
VK3LK	49	50	
VK6HK	47	47	13
VK8ZLX	45	60	1
VK3AMK	45	47	
VK5RO	43	63	3
VK8GB	42	42	3
VK6RO	39	39	1
VK1RX	39	39	9
VK6PA	36	57	
VK3AUI	36	36	
VK5LP	35	36	9
VK3AWY	34	36	
VK3BDL	32	32	
VK3NM	31	34	
VK5BC	29	63	
VK2DDG	25	26	3
VK4ZJR	25	25	
VK4KHZ	23	34	
VK3XQ	23	25	2
VK2KAY	21	23	
VK2BNN	20	21	
VK9LG	20	20	
VK7JG	20	22	2
VK4BJE	19	25	
VK4KAA	19	20	
VK3TU	17	19	
VK2ZRU	16	19	4
VK4ZSH	16	16	
VK2ZSC	16	29	
VK9LE	14	14	
VK3ALM	13	15	7
VK3KTO	11	11	
VK5KL	11	19	7
VK6OX	10	10	
JA2TTO	48	48	6
YJ8RG	25	25	

Happenings in Australia

Since the upsurge in six metre activity during January, which resulted in some good pickings for the VHF/UHF Field Day and the working of VK0IX in Antarctica, the band has been much quieter.

While on the subject of Antarctica, the following is a list in call area and alphabetical order of all callsigns worked by Darin VK0IX at Casey during January 1995 — the list being supplied by his QSL Manager, John McRae, 13 Francis Street, Kapunda, 5373, SA. Please send a SASE and card for your QSL.

14/1: VK2QF.
VK3OT.
VK5s ARC/p, GRS, LP, NY, PO/p, TZX, UBJ, ZBK, ZBR, ZIP, ZTV, ZWI.
15/1: VK1RX.
26/1: VK3OT.
31/1: VK3s AKK, ALM, AMK, AMX, AZM, AZY, BDL, DUQ, KMF, LK, OT, YDE, YY, ZNF.
VK5s AKM, AVQ, BC, EME, KK, LP, NC, WA, ZBK.
VK7JG, VK7ZMF.

There were a total of 41 contacts with 37 different stations in five states. Call area totals were VK1-1, VK2-1, VK3-14, VK5-19, VK7-2. The absence of VK6s is interesting — they were certainly alerted — and there are no contacts with ZLs.

VK3OT, VK3LK and VK5NC also worked Mark VK0AQ at Casey during November 1993 thus becoming the first world contacts to Antarctica on six metres. The same three stations did it again during the above openings.

The higher bands have also been making their presence felt. The good conditions commenced on 10/2 as the result of a large, slow moving high pressure system with isobars extending right across the lower portions of the continent and to the Indian Ocean. The pressure gradients were not as high as would be expected for such conditions, varying from 1022 to 1027 hpa. During the evening of 10/2 VK5NY PF94 worked VK6WG OF84 at 5x9 on 144 and 432 and 5x5 on 1296.

The conditions were such that the bands from 144 to 1296 were open almost continuously. Wally VK6WG in Albany was able to monitor a keyer provided by Roger VK5NY on 1296, running about 10 watts to four loop Yagis, and compare that signal with those on 432 and 144 provided by the Adelaide beacons on Mount Lofty PF95. Although the latter were running less power to omni-directional antennas, there were times when the lower bands were best but at other times 1296 was far ahead, particularly as the week progressed. Signals on 144 and 432 penetrated to VK3 but not on 1296.

Roger VK5NY believed the conditions would have permitted operation on 10 GHz but Wally VK6KZ was not available. Darrell VK6KDC at Manjimup OF85 has a good location about 300 metres ASL, runs 150 watts to a pair of 12 elements on two metres and is believed to have worked David VK3AUU at Drouin QF21 for a distance of well over 2000 km. Manjimup is about 70 km inland and a further 150 km west from Albany. Others to be worked were VK6AS and VK6APZ at Esperance PF06 and VK6DM OF85. 144 and 432 remained good on 21, 22 and 23/2 but 1296 had dropped out.

On 21/2 VK5NY and Trevor VK5NC QF02 in Mount Gambier had a 5x5 contact at 2053 on 1296. From 17/2 conditions were improving in an easterly direction with Ian VK3AXH QF12 at Ballarat 5x3 on 432 and up to 5x9 on 144 to VK5NY. On 20/2 Roger used 144 to work Doug VK3KAY QF21 at Geelong who runs 10 watts to an eight element, Charlie VK3BRZ QF21 at Lara and Russell VK3ZQB QF11 at Port Fairy.

News from the UK

The January 1995 issue of *Six News*, the quarterly magazine of the UK Six Metre Group, carries our list of 173 countries First Worked from Australia on 50-54 MHz. With some appended explanatory notes from me, the coverage extends to five pages and I am grateful that the Editor, Neil Carr G0JHC, has so well set out the list. It should make interesting reading, particularly for northern hemisphere operators. It will also add a few new entries to the world tally of countries worked on six metres.

Neil also gave some prominence to the existence of VK0IX at Casey in the Antarctic. Since then I have passed on last month's information about the working of Darin VK0IX by VK stations. To date 37 stations have worked Darin which is quite good when so many considered it would be impossible! I heard him on seven occasions and worked him twice.

I suppose it is a matter of priorities and how a writer personally sees a subject, but I was interested to note that, when the May issue of *HRT* or *Ham Radio Today* in the UK hits the sales places, there will

be only a passing reference (in fact, one and a half lines plus a map), to the recent setting of the 10 GHz world record by two Australian amateurs, VK5NY and VK6KZ. I thought that they did rather well to finally take the record from the Italians!

After more than four years of committee involvement and a period as Chairman of the UK Six Metre Group, Geoff GJ4ICD has finally stepped down. I cannot but admire the man for his dedication to the cause of amateur radio. Geoff lives on the island of Jersey and each time he flew to the UK for meetings his cost was around £500 or about $A1000 for the round trip. Unselfishly, he believes this kind of money could be put towards exotic DXpeditions — but he doesn't want you to tell his wife! From Australia, we say thanks Geoff for a job well done and for your continuing interest in amateur radio, especially the provision of six metre beacons for remote places.

As if on cue, Geoff will be part of a DXpedition to Cape Verde Islands and operating from 1 to 14 June. Callsign may be D44BC or D44GB, locator square HK76mk, 100 watts on 50 MHz and 1000 watts on HF. The islands are due west of the westernmost point of Africa around Dakar in Senegal. Some distances are UK 4425 km, Italy 4400 km, Jordan 6300 km, French Guiana 3280 km, Martinique 3860 km and USA 5200 km. As it will be mid-summer, multi-hop Es may produce some surprises.

Geoff makes the following observations and his comments may answer a few questions some of us have pondered here in Australia. He says, *Looking back over the past year at 50 MHz QSOs from Jordan and Mauritania some interesting facts can be recalled.*

The Jordan expedition's shortest QSO was SV9ANK at about 1000 km. In Mauritania, Eric 5T5JC's shortest QSO via Es seems to have been with EA8 at around the same distance, with the MUF over 100 MHz. 5T5JC's 3000 to 4500 km QSOs were as far north as northern Scotland and arcing across to Sweden and they were in the hundreds and up to S9+. Cape Verde's range at similar distances should be around IM76 in southern Spain to IO83 in central UK, providing similar propagation patterns exist.

WIA News

Amateur Licence Fees — $51, For Now

Amateur Licence fees will increase to $51, for all licence grades, commencing from 3 April. The Hon Paul Elliott, Parliamentary Secretary to the Minister for Communications, made the announcement in the House of Representatives late in the evening of 8 March.

The new fee is $20 less than the highest fee of $71 proposed by the Spectrum Management Agency (SMA) in February, but $14 above the $37 licence fee current in March, a 38% increase.

The decision followed urgently called, direct consultation by the Government with the Wireless Institute of Australia on Monday, 6 March.

Paul Elliott, who is the member for Parramatta (NSW), requested consultation with the WIA late the previous week, to hear from the Institute the views expressed by the amateur radio community, how the Institute had responded to the Apparatus Licence Inquiry and to hear submissions on a way forward.

Attending for the WIA were Federal Vice Chairman Roger Harrison VK2ZRH and Dr David Wardlaw VK3ADW, Federal Coordinator for International Telecommunications Union (ITU) activities and the Institute's representative on the International Radiocommunications Advisory Council (IRAC). Both represent the WIA on the SMA's Radiocommunications Consultative Council (RCC).

Amongst the information put to Paul Elliott was the many ways the Amateur Radio Service was of value to the Community — particularly the self-training aspect, the lack of detailed information from the SMA (until December 1994) on how Amateur Licence fees would be affected by the price-based spectrum allocation system, the range of views expressed by the amateur radio fraternity since the December announcement of the proposed fee structure, the issue of amateur radio access to the spectrum — particularly addressing misinformation about primary and secondary allocations, how WIA representatives had provided expert assistance on non-amateur matters on behalf of the Australian Governments's delegations at international radio conferences — at WIA's members' expense, and the WIA's objections from the outset that the Amateur Radio Service was unsuited to being included under the Apparatus Licence system.

As many amateurs will be aware, the WIA wrote to MPs, both Government and Opposition, during January and February, as did many individual amateurs and some WIA State Divisions, putting objections to the proposed fee structure.

The Government made the announcement about the revised fee arrangement during the second reading of legislation, associated with the Radiocommunications Act, dealing with licence payment arrangements.

The Government negotiated the new Amateur Licence fee arrangement with the SMA subsequent to consultation with the WIA. In a 9 March press release announcing the revised fee, Paul Elliott acknowledged the value amateur radio provides to the community, saying, *"After further consultation and in recognition of the valuable services provided by Amateurs to the community in maintaining communications links, and in training young people to be proficient in communications technology, the SMA has decided to reduce the tax component of Amateur fees to the minimum level".*

Mr Elliott's release said the new fee was based on the administration and maintenance costs provided to amateurs by the

5T5JC worked ten grid squares in northern Europe between 4500 and 5300 km with signals to S9+. JP74 seems to have been his best European DX at 5300 km and is well outside the northern temperate zone; he may well have been able to work further but there was little or no activity beyond this distance for him to work. Cape Verde is 6100 km to JP74, and the 4500 km belt lands an arc from IO83 (Manchester) to JN19 (Paris) to JN36 (HB9) and on to JM76 (9H1). The 5300 km belt arcs from IP52 (OY) to JO64 (northern DL) to JN89 (OK) to KN03 (YU7).

From Cape Verde, if multi-hop propagation exists, then we could have QSOs with many stations around 6000 km (OH). Eric 5T5JC did this to the USA but could not do it in Europe due to no activity in the Arctic circle!

Our expedition to Jordan was a similar situation, the furthest European distance I recall was a station in Scotland at 4200 km, the distance from JY7SIX to 5T5JC was around 5100 km but, again, these distances could not be exceeded because there is little or no activity until you hit the USA which we did with one QSO at 10,000 km, which is nearly 5000 km further than 5T5JC, so what lies in the 5000+ km belt for the D44 expedition? Certainly more than we achieved from Jordan which goes without saying as having been brilliant.

From the Australian viewpoint our recent contacts, 37 in all, to Darin VK0IX at Casey on the Antarctic continent were mostly around 3800 to 4000 km with that to VK2QF Mudgee QF47 about 4500 km and Brisbane (heard) QG62 5200 km. Perth OF78 is about 3800 km. Fortunately for the VK5s the VK0IX V-beam points to Adelaide and the first offer of contacts occurred during the VHF Field Day when more stations than usual were on six metres. The Melbourne stations were lucky to have propagation right at the end of the period of openings.

It seems we have distances from Casey somewhat akin to those that Geoff GJ4ICD has been talking about. The only reason more stations did not work VK0IX is probably due to a general (but false) acceptance that most of the Es was gone by mid-January and that Antarctica was too far anyway! We should be grateful to

WIA News

SMA, including the issuing of licences, managing interference, issuing and registering call signs, arranging and accrediting examinations, and international coordination.

"While we have recognised the unique community contribution of amateurs, it is quite reasonable that amateurs pay for the ongoing services provided by the SMA in managing the radio frequency spectrum they use," Mr Elliott said.

During the House of Representatives debate on 9 March, apart from some ill-informed comments by some MPs, strong arguments in support of the Amateur Radio Service were made by Government members and MPs on the Opposition benches, particularly Judy Moylan (Lib) the member for Pearce, WA. Favourable mention of the WIA and the Wireless Institute Civil Emergency Network (WICEN) was made in some speeches.

While the announcement of the revised fee can only be seen as a first step in resolving the whole issue of amateur radio licensing, a full response to the Government's announcement will be issued by the WIA after further analysis of the announcement and subsequent statements.

On 9 March, the Spectrum Manager, Christine Goode, wrote to WIA President Neil Penfold with further information on the revised fee structure and seeking a meeting. Christine Goode advised that a common fee is to apply to all amateurs irrespective of the particular category, with the exception of beacons and repeaters which will be licensed on an assigned frequency basis, with fees determined in accordance with the "standard fee table" (published in the SMA's document, "Inquiry Into The Apparatus Licence System: A New Outlook", released in February).

The new licence fee of $51 per annum consists of an administrative charge of $38, a spectrum access tax of $10 and a $3 spectrum maintenance charge (which is a fixed percentage of the access tax).

Christine Goode explained that, although amateurs have access to significant amounts of spectrum, the SMA decided, in consultation with the Government, to recognise some of the public value of amateur use of the spectrum by reducing the access tax component to the minimum level set out in their overall fees tables.

She added that the SMA will continue to require amateurs to contribute their fair share of the overall costs of managing the spectrum and in the SMA providing services specifically to amateurs. In addition, since the minimum access tax is now applied, Christine Goode said it is no longer necessary to differentiate between licence types on the basis of the extent of spectrum access, as had been previously proposed.

The new fees will apply to every amateur licence issued after 3 April 1995 and to all renewals due on or after that date.

The matter of licence fees for amateur beacons and repeaters is to be pursued by the WIA with the SMA.

Arrangements for the proposed meeting between Christine Goode and WIA President Neil Penfold VK6NE had not been confirmed by press deadline.

At the 6 March meeting between Paul Elliott and WIA representatives, Paul Elliott, recognising WIA objections to the Amateur Radio Service being administered under the Apparatus Licence system, has invited the Institute to put a submission to the Government as to how the Amateur Service might be better licensed in the future.

This invitation provides a further opportunity to gain greater recognition of the unique nature of the Amateur Radio Service, to obtain further improvements for the amateur radio fraternity and a better approach to licence fees.

Steve VK3OT for his persistence and belief that Casey could be worked and, having proved that to be so, he alerted others that it was possible. We also had the advantage of a telephone which was used to alert Darin that the band was open, and he was prepared to make the effort and tramp the considerable distance through snow to the radio shack, perhaps at times wondering whether he would actually work anyone! To ensure he did not waste his time I phoned at least six amateurs to alert them that the band was open.

The end result of all these discussions is really that, without the assistance of F2, long distance six metre contacts are possible via the E-layer given reasonable propagation conditions, but there exists the need for dedicated operators at both ends. In the range of 4000 to 5000 km distance from VK there are very few six metre operators to the east of us in the Pacific and none of those have indicated that they are ready and willing to make a worthwhile attempt; there appear to be none in the Indian Ocean to our west where there is precious little land (maybe I should move and live on Amsterdam Island), and few operators on six to the north within that range available to amateurs in the southern half of VK. In the future, DXpeditions offer us the best opportunities to work those areas but such expeditions are immensely costly and the operator cannot work himself so he misses out while providing contacts to others. That's really dedication to the cause of amateur radio.

Special Request

I would like to put together a list of amateurs who have worked to areas **outside** Australia (remember Tasmania is Australia!), using the bands 144, 432, 1296 MHz (and possibly higher), via tropospheric propagation, that is inversions, ducts, forward scatter, etc. Omit 144 MHz Es contacts.

Such contacts are likely to have occurred from the eastern states to places like New Zealand, New Guinea, New Caledonia and possibly other islands. Details of the 144 MHz contacts to Japan would also be useful.

As early as conveniently possible, could you please send the details in writing stating your callsign, station worked with location and locator square (if known), date and time of contact, mode, signal reports, type of propagation and any other relevant details, especially weather patterns. New Zealand and New Guinea readers are also invited to send information.

It will be useful information to include in my data base but also will assist Emil Pocock W3EP, of *The World above 50 MHz* in *QST* who is seeking such information for a special article he is preparing on tropo coverage within the Pacific regions.

Closure

By the time you read this we will be in the equinoxial period, so be aware that odd things can happen on the bands, particularly six metres. Sudden extensions to distances are possible and TEP to Japan is sometimes available.

Closing with two thoughts for the month:

1. Age does not diminish the extreme disappointment of having a scoop of ice-cream fall from the cone, and
2. Self-delusion is pulling in your stomach when you step on the scales.

73 from The Voice by the Lake
**PO Box 169, Meningie SA 5264*
Fax: (085) 751 043
Packet: to VK5ZK for VK5LP
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Support the WIA in order to to protect Amateur Radio frequencies.

Update

Incorrect Phone Number for ZRV Electronics Pty Ltd

On Page 15 of the 1995 *Australian Call Book* the phone number is incorrectly shown for ZRV Electronics. The correct phone number is (03) 439 3389. If you own a 1995 *Australian Call Book* it might be a good idea to correct your copy now.

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Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

B	COOPER	VK2DHO
K (Keith)	JAMES	VK2KVQ
H J (Howard)	FREEMAN	VK2NL
K B (Keith)	IRESON	VK3AIR
J D	MCNALLY	VK3BJM

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What's New

Bob Tait VK3UI introduces new products of interest to radio amateurs.*

Electronics Software Compendium CD ROM from Buckmaster Publishing

This CD ROM contains 664 compressed files in various formats, some of which will run under Windows and some which will only run in DOS.

The material contained on this CD has been gleaned from many sources. There are many Shareware files covering log keeping programs, CW tutors, examination text, equipment modifications for packet, RTTY and other miscellaneous modifications. There is an absolute abundance of material relating to antennas which covers design, plots, feed systems, losses, and gain, etc.

The one disappointing aspect about this CD is that, whilst it has a lot of data pertaining to amateur radio, it has, in my view, not been edited. There is a lot of file duplication, along with a fair bit of rubbish which appears to be downloads from packet bulletin boards.

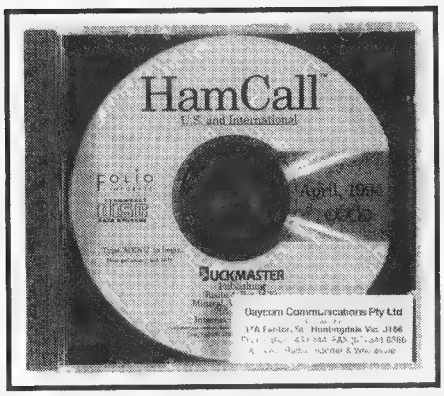
However, if you are prepared to sift through the files to find what you want, and can accept a bit of frustration at times, this CD is still good value.

The 1995 release should be available during April from Daycom Communications Pty Ltd. The ordering number is BR497 and the cost is $45.00.

Ham Call CD ROM from Buckmaster Publishing

The US and International Call Book is available on CD ROM and covers most countries in the world with the exception of Australia. The program is simple to use and will run under Windows. The user can search by call sign, name, or town, etc.

In addition to the International and US Call Book, the CD contains many amateur utility programs which are similar to the data contained in the Software Compendium reviewed above.



The 1995 addition will be available from Daycom Communications Pty Ltd during April. The ordering number is BR498 and the cost is $80.00.

Daycom Now the Australian Agents for OPTOELECTRONICS

Daycom Communications Pty Ltd has become the Australian agent for the OPTOELECTRONICS range of products. These include a wide range of frequency counters, signal strength meters, signal interceptors, tone counters as well as DTMF and CTCSS decoders. Watch for further information on their product range.

For enquiries about any of the above please contact Daycom on (03) 543 6444 during office hours.

**C/o PO Box 2175, Caulfield Junction VIC 3161*

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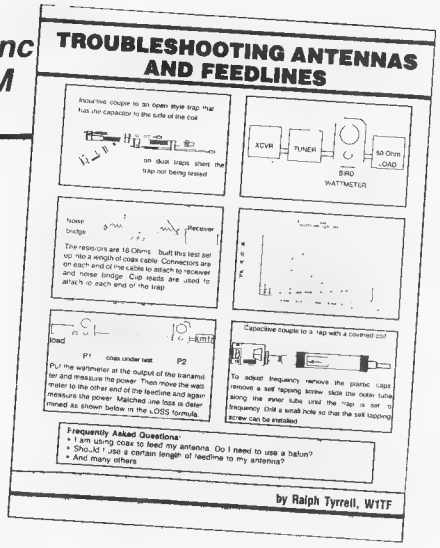
■ Book Review

Troubleshooting Antennas and Feedlines

By Ralph "Ty" Tyrell W1TF
Published by MFJ Enterprises Inc
Reviewed by Ron Fisher VK3OM



"Another antenna book" I hear you say. "Surely they must have covered antennas backwards by now." Well, this one is somewhat different. It sets out how to fix them. Just how well it does this we shall soon see.

First a little about the author who, I must admit, is new to me. "Ty" was first licensed as an amateur in 1950 so that probably makes him about the same vintage as me. He worked in Aerospace for many years and then went to work as a technical adviser to a major antenna company (unnamed, unfortunately) talking to amateurs about their antenna problems. He retired recently to write this book. This has been produced and published by MFJ Enterprises, the people who make all of those wonderful antenna tuners and other gadgets for amateurs.

There is no doubt that the antenna system is the most important part of any radio station. It is most important to put it up the right way and keep it working at top efficiency. There are seven chapters which, in order, are; Antenna Fundamentals, Directivity and Gain, Feeding and Matching Principles, Antenna Ideas, Equipment Reviews and, finally, Trouble Shooting Antennas.

The first three chapters are all good stuff that any antenna builder should know about. Unfortunately, a few errors might give the novice antenna constructor the wrong idea. For instance, there are three excellent charts that show how to calculate matched feed line loss, feeder loss with unmatched line input and total line loss. However, a description on how to use these charts in chapter five refers the reader to the wrong chart. The matched feeder line loss chart is in chapter three on page 6, not 7 as stated.

Well, what does the trouble shooting chapter cover? Let's look at the sub headings. **Trouble Shooting Feed Lines.** Is your coax due for replacement? Do you have a short somewhere? "Ty" takes you through the various problems that might pop up. **Trouble Shooting with a VSWR Bridge.** An instrument we all have in the shack. Do you know how to get the most out of it? **Testing a Feed Line Using a Noise Bridge. Trouble Shooting a Dipole; Rotating Trap Dipoles and Yagis; Checking Traps.** And so it goes on.

After reading all this you will certainly have a better idea of how to look for problems when they arise. The chapter of Equipment Reviews gives a lot of coverage to MFJ equipment which, I guess, is to be expected. However, "Ty" looks at the good points but fails to mention any of the poor aspects. For instance, in his review of the MFJ-815B peak reading SWR/Wattmeter he states, *"The peak reading is used to average the power reading and hold the meter for a short length of time making it easier to read the meter on short duration signals".*

I think "Ty" is a bit mixed up here. Perhaps he worked it out by the fact that the MFJ meter reads about half the actual PEP power when switched to "Peak". See *QST* February 1991 where they compare peak-reading HF/MF Wattmeters for the full story.

At a price of only $22 this book is good value and is certainly worth reading. However, it will be better when the revised edition comes out and the mistakes are cleared up. "Ty" also needs a better "spell checker" on his word processor to correct the several spelling mistakes that occur.

Our review copy came from Daycom but you should be able to order it through your local Divisional Bookshop.

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HF PREDICTIONS

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

V in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4
0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

VK EAST The major part of NSW and Queensland.

VK SOUTH Southern-NSW, VK3, VK5 and VK7.

VK WEST The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 19. The predicted value for May is 17.3.

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VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	21.1	14	17.5	-20	21	19	14	5
2	21.6	15	18.3	-19	22	20	15	7
3	21.7	15	18.1	-14	23	21	16	7
4	21.6	16	17.9	-7	25	22	17	8
5	21.3	17	17.5	5	28	24	17	7
6	20.5	20	16.6	28	33	26	18	6
7	19.0	22	15.2	41	35	24	14	0
8	17.2	23	13.6	45	33	20	7	-9
9	15.3	25	12.1	47	29	13	-2	-23
10	13.5	27	10.7	48	24	4	-14	.
11	12.3	28	9.7	47	18	-4	-26	.
12	11.7	28	9.3	46	15	-9	-32	.
13	11.2	29	8.9	45	12	-14	-39	.
14	10.9	29	8.6	45	10	-17	.	.
15	10.7	29	8.4	44	9	-19	..	..
16	10.4	30	8.0	44	7	-21	.	.
17	9.5	31	7.3	42	0	-34	..	..
18	9.1	31	7.0	41	-3	-39	..	.
19	9.4	26	7.1	32	-2	-34	.	..
20	11.3	19	8.5	19	9	-12	-33	.
21	14.7	16	11.2	4	17	6	-7	26
22	17.6	15	13.8	-7	20	14	6	-7
23	19.5	15	15.6	-14	21	17	11	0
24	20.3	14	16.5	-19	21	18	12	3

VK WEST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	20.8	13	16.9	-27	18	17	12	3
2	21.6	13	17.9	-29	18	18	13	5
3	22.0	13	16.5	-27	19	19	14	6
4	22.1	13	18.5	-21	21	20	15	7
5	22.0	14	18.2	-11	23	21	16	7
6	21.7	16	17.7	6	28	24	17	7
7	20.3	19	16.2	27	32	25	16	5
8	18.3	22	14.5	40	33	23	12	-2
9	16.2	25	12.8	44	31	18	5	-12
10	14.4	27	11.4	46	28	11	-3	-24
11	13.1	29	10.3	47	24	6	-12	-36
12	12.5	30	9.9	47	22	2	16	.
13	11.9	30	9.4	46	20	-1	21	.
14	11.4	31	9.0	45	17	-5	-26	.
15	11.0	31	8.7	45	16	-8	-30	..
16	10.8	31	8.5	45	14	-9	-32	...
17	10.0	33	7.7	44	11	-15	.	.
18	9.8	33	7.4	43	10	-17		.
19	9.7	32	7.4	41	7	-20	.	...
20	9.9	24	7.5	27	7	-17	.	...
21	11.8	20	9.3	16	13	-3	-21	..
22	15.0	17	11.5	1	18	9	-2	-19
23	17.9	14	14.0	-13	19	14	7	-5
24	19.9	13	15.8	22	18	16	11	1

VK EAST — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	10.4	12	7.6	0	5	-11	-29	..
2	9.7	6	7.5	-9	3	-11	-28	. .
3	9.3	0	7.1	-18	1	-13	-29	.
4	11.9	3	9.1	-36	4	-2	-13	-29
5	16.5	7	12.8	...	6	6	1	-8
6	19.0	7	14.0	...	5	8	4	-3
7	19.2	7	14.3	...	6	8	5	-2
8	17.8	8	14.2	...	7	8	3	-5
9	16.2	9	12.8	-39	9	6	0	-11
10	14.4	9	11.4	-27	9	4	-5	-19
11	12.8	11	10.1	-14	9	0	-12	-30
12	11.6	13	9.2	-2	9	-4	-19	..
13	11.0	17	8.7	11	9	-7	-24	.
14	10.5	22	8.3	23	9	-10	-31	..
15	10.2	26	8.0	31	9	-14	-36	.
16	9.9	28	7.6	35	8	-16	..	..
17	9.7	30	7.1	38	7	-18	...	. .
18	9.3	30	6.8	38	5	-22	.	..
19	8.9	31	6.5	37	2	-27	. .	...
20	9.2	31	6.3	38	4	-24		.
21	9.1	30	6.3	37	2	-27	.	.
22	8.8	27	6.1	31	0	-29	..	..
23	8.5	20	6.0	20	-2	-29	...	.
24	8.9	15	6.4	11	0	-23	...	.

VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	10.3	20	7.5	16	9	-10	-29	...
2	10.0	14	7.6	6	6	-11	-30	..
3	12.7	14	10.0	-5	12	1	-11	-29
4	17.4	13	13.4	-25	15	12	5	-5
5	19.3	10	14.3	...	11	11	7	-1
6	19.8	9	14.4	...	10	11	7	0
7	19.5	9	14.1	...	9	10	6	-1
8	18.7	9	13.4	...	10	10	5	-3
9	17.5	10	12.4	-35	11	9	3	-7
10	16.0	11	11.2	-24	12	7	0	-13
11	14.3	12	10.0	-12	12	4	-6	-23
12	12.8	14	8.9	1	12	0	-14	-35
13	11.6	18	8.0	13	10	-6	-23	.
14	10.7	21	7.4	23	9	-12	-32	
15	10.2	25	7.0	31	7	-16	.	.
16	9.8	27	6.7	34	5	-21		.
17	9.4	29	6.5	37	3	-26		
18	9.1	30	6.4	37	1	-29	. .	
19	8.8	30	6.3	37	-1	-33		.
20	8.7	30	6.3	36	-2	-34		
21	9.4	29	6.7	38	3	-25	.	.
22	9.3	30	6.5	38	3	-26		
23	9.0	27	6.5	32	1	-27		
24	9.6	22	6.9	24	4	-21	.	.

VK WEST — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	9.5	23	7.2	25	4	-20	...	...
2	9.3	17	7.1	13	4	-18	...	..
3	12.1	15	9.5	1	12	-1	-15	-36
4	16.9	13	13.0	-19	16	11	4	-8
5	19.6	11	15.4	-37	13	13	8	0
6	20.4	10	16.6	...	11	13	9	1
7	20.5	9	16.9	...	10	12	8	1
8	20.2	9	16.5	...	10	12	8	0
9	19.4	10	15.7	..	11	11	7	-2
10	18.0	11	14.4	-34	12	10	4	-6
11	16.3	12	13.8	-19	14	9	0	-12
12	14.5	15	11.5	-2	15	6	-5	-22
13	12.9	18	10.2	12	15	1	-14	-35
14	11.7	22	9.3	25	14	-4	-23	
15	11.1	26	8.8	34	13	-8	29	
16	10.6	28	8.4	37	11	-12	-35	
17	10.2	29	8.1	40	9	-16		
18	10.0	30	7.8	41	8	-18		
19	9.8	31	7.6	40	7	-20		
20	9.4	31	7.3	40	4	-24		
21	9.0	31	6.9	39	1	-29		
22	9.3	31	7.0	39	3	-26		
23	10.1	31	7.8	41	9	-16		.
24	9.4	31	7.2	39	5	-23		.

VK EAST — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	24.4	13	20.2	...	18	21	18	12
2	25.5	13	19.6	...	18	21	19	14
3	26.4	13	20.6	...	18	22	20	16
4	26.8	14	22.1	...	19	22	21	17
5	26.8	14	22.0	-38	20	23	22	17
6	26.1	14	21.2	-28	23	24	22	17
7	24.5	15	19.8	-13	26	25	21	15
8	22.4	17	18.8	13	31	26	20	11
9	20.3	20	16.2	41	36	27	18	5
10	18.1	22	14.4	46	34	22	10	-6
11	16.4	23	13.0	48	31	16	2	-17
12	15.5	24	12.3	49	29	12	-3	-24
13	14.8	24	11.7	49	27	9	-7	-30
14	14.2	25	11.3	48	24	5	-12	-37
15	13.6	25	10.7	48	22	2	-17	.
16	13.2	25	10.3	47	20	-1	-21	..
17	12.1	26	9.4	46	15	-10	-33	..
18	10.4	27	8.0	42	3	-29	.	...
19	9.8	28	7.5	41	-2	-37	..	...
20	10.1	28	7.8	42	0	-32	. .	. .
21	14.6	22	11.5	35	23	6	-9	-31
22	21.3	16	16.8	0	26	23	16	7
23	22.7	15	18.2	-19	23	22	17	10
24	23.3	14	19.0	-31	20	21	17	10

VK SOUTH — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	18.9	11	15.4	. .	13	12	7	-2
2	19.7	11	16.3	..	12	13	9	0
3	20.2	11	17.1		12	13	10	2
4	20.3	11	17.0		13	14	10	2
5	20.3	12	16.8	..	14	14	10	2
6	20.1	13	16.4	-35	16	15	11	2
7	19.3	14	15.6	-21	18	16	10	0
8	17.9	16	14.4	0	22	16	7	-5
9	16.2	21	12.9	33	27	14	1	-16
10	14.4	22	11.5	40	23	6	-10	-32
11	12.8	24	10.2	42	17	-4	-25	..
12	11.7	25	9.2	42	11	-15	..	..
13	11.1	25	8.8	42	7	-21	.	.
14	10.6	25	8.4	41	3	-27	.	
15	10.3	26	8.2	40	0	-32		
16	10.1	26	7.9	40	-1	-35	.	.
17	9.9	26	7.7	39	-3	-37		.
18	9.5	26	7.3	38	-8	..	..	.
19	8.8	26	6.7	36	-17	. .		.
20	8.8	26	6.7	36	-16	..		...
21	10.6	25	8.1	41	3	-27	.	.
22	13.8	14	10.6	4	13	0	-14	-35
23	16.6	13	13.0	-17	15	9	1	-13
24	18.3	12	14.6	-31	14	12	6	-4

VK WEST — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	22.0	14	17.6	-27	20	20	15	7
2	22.6	13	18.4	-36	18	19	16	9
3	23.7	13	19.6		18	20	17	11
4	24.8	14	18.9		18	21	19	13
5	25.4	14	21.2		19	22	20	15
6	25.6	14	21.1	-37	20	23	21	16
7	25.5	15	20.9	-28	23	24	22	16
8	24.7	16	20.0	14	26	25	22	15
9	23.1	17	18.6	6	30	27	21	13
10	21.0	19	17.7	31	34	27	19	7
11	18.9	20	15.0	38	33	23	12	2
12	16.8	21	13.3	43	30	16	3	-15
13	15.2	22	12.1	45	26	9	-6	-29
14	14.4	23	11.4	48	24	5	-13	-38
15	13.7	24	10.9	47	21	0	19	
16	13.1	24	10.5	47	19	-4	25	.
17	12.7	24	10.0	46	16	-7	-30	.
18	12.4	24	9.7	46	15	-10	33	
19	11.5	25	9.0	44	9	-19		.
20	10.1	25	7.8	41	-3	-38	.	. .
21	9.7	26	7.5	39	7	.		
22	12.3	22	9.8	36	13	-10	33	.
23	16.8	16	13.1	5	21	12	1	-14
24	20.4	15	16.1	-14	22	19	13	3

VK EAST — EUROPE

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	10.0	-3	7.3	-33	1	-8	-21	...
2	9.6	-10	7.1	...	0	-8	-20	-39
3	10.2	-11	7.5	...	0	-5	-16	-32
4	11.8	-7	8.3	...	-1	-2	-9	-22
5	14.2	-2	10.7	...	-2	0	-3	-12
6	16.4	1	12.3	...	-3	2	0	-6
7	17.8	4	13.4	...	-3	4	3	-2
8	18.6	6	14.0	...	0	6	5	0
9	19.2	9	14.5	...	5	10	8	2
10	18.4	11	14.6	...	10	11	7	0
11	16.3	12	13.0	-30	13	10	3	-7
12	14.8	15	11.7	-11	15	8	-1	-15
13	14.0	17	11.1	3	17	7	-4	-21
14	13.3	21	10.6	17	18	5	-8	-28
15	12.8	23	10.1	25	19	3	-12	-34
16	12.4	25	9.7	33	19	1	-16	...
17	12.1	27	9.4	38	19	0	-18	...
18	11.2	29	8.7	41	15	-6	-27	...
19	9.9	30	7.6	39	7	-19	...	...
20	9.5	30	7.3	38	5	-23	...	...
21	10.8	30	8.2	41	15	-7	-28	...
22	10.2	23	7.8	23	10	-11	-31	...
23	10.8	13	7.6	-1	7	-7	-24	...
24	10.4	4	7.5	-19	4	-8	-23	...

VK SOUTH — EUROPE

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	10.9	6	7.7	-18	5	-6	-20	...
2	10.3	-2	7.4	-34	2	-7	-19	-39
3	10.8	-6	7.9	...	1	-4	-14	-31
4	12.7	-4	8.6	...	0	0	-7	-19
5	15.5	0	11.5	...	-3	2	0	-8
6	18.0	3	13.3	...	-5	3	3	-2
7	19.4	5	14.4	...	-5	4	4	1
8	20.2	6	15.0	...	-3	5	6	2
9	18.9	7	15.1	...	0	6	5	0
10	17.1	7	13.5	...	4	7	3	-4
11	15.2	8	12.1	..	8	6	0	-11
12	13.5	10	10.7	-25	10	3	-6	-22
13	12.3	14	9.7	-5	11	0	-13	-33
14	11.7	18	9.3	10	12	-3	-19	...
15	11.2	22	8.8	22	12	-6	-25	...
16	10.9	25	8.6	31	12	-9	-30	...
17	10.7	27	8.4	36	12	-11	-33	...
18	10.5	29	8.1	39	11	-13	-36	...
19	10.1	29	7.8	39	8	-17	...	...
20	9.5	30	7.3	38	4	-24	...	...
21	9.7	30	7.3	38	6	-22	...	...
22	10.2	30	7.9	40	11	-14	-37	...
23	10.3	23	8.0	24	9	-11	-32	...
24	11.3	15	7.9	3	10	-4	-20	...

VK WEST — EUROPE

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.5	16	8.1	10	-5	-22	.	..
2	10.8	6	7.7	4	-8	-24	...	..
3	11.3	1	8.2	2	-6	-18	-36	...
4	13.4	1	9.0	2	0	-8	-21	-37
5	16.5	3	12.1	0	3	0	-8	-19
6	19.2	5	14.1	-2	5	4	-1	-9
7	20.8	6	15.3	-3	5	6	2	-4
8	21.6	7	15.9	-3	6	7	3	-2
9	22.4	8	16.5	-1	8	8	5	0
10	21.7	8	16.8	2	9	9	4	-2
11	19.7	9	16.6	7	10	8	1	-8
12	17.7	11	14.1	12	11	5	-4	-17
13	15.7	14	12.5	15	9	0	-13	-29
14	14.3	17	11.3	17	6	-5	-23	...
15	13.6	20	10.7	19	5	-9	-29	..
16	12.9	24	10.2	19	2	-14	-37	..
17	12.5	25	9.9	19	0	-18	...	.
18	12.1	27	9.5	18	-2	-21	..	..
19	11.9	27	9.3	17	-4	-23	.	..
20	11.2	28	8.6	13	-9	-31		...
21	10.0	28	7.7	6	-20	..	..	...
22	9.8	29	7.5	5	-22	...	..	...
23	11.1	28	8.5	14	-9	-31	..	...
24	10.2	25	7.8	7	-16	-39	...	...

VK EAST — EUROPE (Long path)

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	11.6	10	7.8	-12	8	-1	-13	-31
2	11.1	12	7.5	-5	8	-3	-17	-37
3	10.8	14	7.4	4	9	-5	-20	...
4	10.4	18	7.2	13	9	-7	-25	..
5	9.9	23	7.0	24	9	-11	-32	...
6	10.5	24	7.5	27	11	-8	-27	..
7	12.2	23	8.9	27	18	2	-13	-34
8	13.6	22	10.5	18	21	10	0	-16
9	11.1	16	8.5	2	12	0	-13	-32
10	10.6	7	8.1	-15	7	-2	-14	-32
11	11.6	3	9.2	-31	5	-2	-12	-28
12	11.1	-3	8.7	...	2	-3	-12	-27
13	10.7	-8	8.4	...	0	-3	-12	-26
14	10.4	-12	8.1	...	-1	-4	-11	-25
15	10.2	-16	7.9	...	-1	-3	-11	-24
16	9.8	-19	7.5	...	-1	-4	-11	-24
17	9.3	-27	7.1	...	-5	-8	-16	-31
18	9.6	-20	7.2	...	-1	-4	-12	-26
19	11.4	-11	8.9	...	-2	-2	-8	-20
20	14.4	-1	11.0	..	-1	1	-3	-11
21	15.5	3	10.5	...	1	3	0	-8
22	13.9	4	9.4	...	4	3	-3	-14
23	12.9	6	8.7	-35	6	2	-6	-20
24	12.1	7	8.1	-23	7	0	-10	-26

VK SOUTH — EUROPE (Long path)

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	10.7	5	7.3	-18	4	-6	-20	...
2	10.2	9	7.1	-5	4	-10	-26	...
3	9.8	13	6.9	4	4	-13	-32	...
4	9.5	17	6.8	13	4	-17	-37	...
5	9.3	22	6.7	23	3	-21	...	...
6	9.8	23	7.2	25	6	-16	-38	...
7	11.3	23	8.4	26	13	-5	-22	...
8	13.4	21	10.0	23	19	6	-7	-26
9	12.8	18	8.9	12	15	2	-11	-30
10	11.0	12	8.0	-4	8	-4	-18	-39
11	10.0	4	7.5	-16	4	-8	-22	...
12	10.4	0	7.1	-28	2	-7	-19	-38
13	10.0	-7	7.0	-38	0	-7	-18	-36
14	9.6	-12	6.7	...	0	-6	-16	-33
15	9.4	-18	6.6	...	-1	-6	-16	-32
16	9.1	-33	6.4	...	-9	-14	-25	...
17	8.8	...	6.3	...	-15	-21	-32	...
18	9.3	-37	6.8	...	-12	-15	-25	...
19	10.8	-14	7.4	...	-2	-3	-9	-21
20	13.3	-6	9.9	...	-4	-1	-5	-14
21	14.3	-2	9.9	...	-3	0	-3	-11
22	12.8	-3	8.9	...	0	-1	-6	-17
23	11.9	-2	8.2	...	1	-2	-10	-24
24	11.1	1	7.7	-32	3	-4	-15	-32

VK WEST — EUROPE (Long path)

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.2	-5	7.1	0	-9	-20	-38	..
2	9.8	-2	6.9	0	-11	-25	...	.
3	9.4	0	6.7	0	-14	-30	...	.
4	9.2	4	6.6	-1	-17	-35	.	...
5	9.0	8	6.5	-1	-20	...	..	..
6	9.5	11	7.0	1	-17	-36	.	.
7	10.9	14	8.2	7	-8	-25	..	..
8	12.8	15	9.6	12	0	-12	-30	...
9	14.6	15	11.0	16	7	-3	-18	-35
10	13.8	13	9.7	13	4	-5	-20	-38
11	10.6	5	8.3	4	-6	-18	-37	...
12	10.6	-1	7.8	2	-6	-17	-34	...
13	10.8	-5	7.3	0	-7	-17	-33	..
14	10.3	-11	6.9	-2	-7	-16	-32	..
15	9.9	-17	6.7	-3	-7	-16	-30	.
16	9.5	-25	6.5	-6	-10	-18	-33	.
17	9.3	-38	6.4	-13	-16	-25	..	.
18	9.0	...	6.3	-17	-21	-31	..	.
19	8.7	...	6.2	-18	-23	-34	.	.
20	9.2	...	6.6	-13	-17	-26	...	..
21	10.7	-16	7.1	-4	-5	-12	-24	-39
22	12.3	-10	8.7	-4	-4	-9	-20	-33
23	11.5	-10	8.0	-3	-5	-12	-24	...
24	10.7	-9	7.4	-1	-6	-16	-31	...

VK EAST — MEDITERRANEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	11.3	4	8.6	-29	5	-3	-15	-33
2	11.1	-2	8.4	...	2	-4	-14	-31
3	14.3	1	10.8	...	1	2	-3	-14
4	19.6	6	15.0	...	-1	6	5	0
5	23.7	8	18.5	...	-3	7	9	7
6	24.9	8	20.4	..	-4	7	9	8
7	24.1	8	19.5	...	-3	7	9	7
8	22.5	8	18.1	...	0	9	9	6
9	20.4	9	17.2	...	5	10	8	3
10	18.3	10	14.6	...	9	10	6	-1
11	16.2	12	12.9	-30	13	9	3	-8
12	14.7	14	11.7	-11	15	8	-1	-16
13	14.0	18	11.1	8	18	7	-4	-22
14	13.4	22	10.6	24	20	6	-8	-28
15	12.8	25	10.2	34	20	4	-12	-34
16	12.5	27	9.8	38	20	2	-14	-38
17	12.2	28	9.5	42	20	1	-17	...
18	11.4	29	8.9	42	17	-4	-24	..
19	10.2	30	7.9	40	11	-14	-37	...
20	10.0	30	7.6	39	9	-16	..	...
21	12.5	28	9.9	43	21	2	-15	-39
22	11.3	26	8.8	31	16	-3	-21	...
23	11.2	19	8.6	11	12	-4	-20	...
24	13.1	14	10.1	-9	13	4	-7	-24

VK SOUTH — MEDITERRANEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	11.3	10	8.7	-10	8	-4	-18	-39
2	11.0	2	8.3	-30	4	-5	-17	-36
3	14.3	4	11.3	...	4	3	-3	-15
4	20.0	7	15.4	...	1	7	6	1
5	22.2	7	18.6	...	-2	7	8	4
6	22.2	7	18.3	...	-3	6	7	4
7	21.9	7	17.9	...	-3	6	7	4
8	21.0	7	17.0	...	-1	7	7	2
9	19.5	7	15.6	...	2	8	6	0
10	17.6	8	13.9	...	6	8	4	-4
11	15.7	9	12.4	-39	9	7	0	-12
12	13.9	12	11.0	-16	12	4	-6	-22
13	12.6	16	10.0	3	13	0	-13	-34
14	12.0	20	9.5	20	14	-2	-19	...
15	11.5	24	9.0	31	14	-6	-25	...
16	11.1	26	8.7	36	13	-9	-30	...
17	10.9	28	8.5	39	12	-11	-33	...
18	10.7	28	8.3	40	11	-13	-36	...
19	10.2	29	7.9	39	9	-17	...	...
20	9.7	29	7.4	38	5	-22	...	..
21	10.0	29	7.6	39	7	-19	...	...
22	11.6	29	8.9	42	17	-3	-22	...
23	11.0	25	8.4	30	13	-7	-27	...
24	13.4	19	10.3	11	18	6	-7	-25

VK WEST — MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.4	17	8.0	6	-13	-33	.	.
2	10.2	7	7.7	3	-13	-31	...	..
3	13.1	6	10.4	6	0	-10	-26	...
4	18.2	8	14.0	6	8	4	-4	-15
5	21.4	8	16.3	4	9	8	3	-4
6	21.7	7	18.1	2	8	8	3	-4
7	21.8	7	18.0	1	8	8	3	-3
8	21.6	7	17.7	1	8	8	3	-4
9	20.8	7	16.9	3	9	7	2	-6
10	19.4	8	15.6	6	9	6	-1	-11
11	17.6	9	14.9	10	9	3	-6	-19
12	15.8	12	12.5	14	8	0	-14	-31
13	14.0	15	11.1	15	4	-8	-26	...
14	12.8	19	10.1	15	0	-16	-39	..
15	12.2	23	9.6	15	-3	-22	..	.
16	11.6	25	9.2	14	-7	-28	..	...
17	11.3	27	9.0	13	-10	-32		..
18	11.0	27	8.6	11	-13	-36	...	..
19	10.8	28	8.4	10	-15	-38	..	...
20	10.2	28	7.9	6	-21	...		..
21	9.3	29	7.2	0	-31	...	..	...
22	9.2	29	7.1	0	-32	..	..	...
23	10.7	29	8.3	11	-13	-36		..
24	10.4	25	8.1	9	-15	-38	.	...

VK EAST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	23.8	10	20.1	...	4	11	12	8
2	21.8	11	17.3	...	10	14	12	7
3	19.3	13	15.3	-36	15	15	10	2
4	17.2	16	13.6	-8	20	15	7	-4
5	15.9	20	12.6	14	24	15	5	-9
6	15.2	24	12.0	33	27	15	3	-14
7	14.6	26	11.6	38	27	13	0	-18
8	14.0	27	10.9	42	26	11	-3	-23
9	13.4	28	10.5	44	25	9	-6	-28
10	12.4	29	9.6	43	22	3	-13	-37
11	11.2	30	8.6	42	17	-4	-24	.
12	11.4	30	8.7	42	18	-3	-22	...
13	13.0	27	10.2	43	22	5	-12	-35
14	11.3	25	8.8	29	15	-4	-23	...
15	10.4	18	8.0	13	8	-10	-29	..
16	11.4	12	8.8	-5	8	-5	-20	...
17	10.0	2	7.7	-19	2	-11	-27	..
18	9.7	-5	7.4	-31	0	-11	-26	..
19	12.2	-1	9.3	...	1	-2	-11	-26
20	16.7	4	12.9	...	0	4	0	-7
21	20.4	6	16.0	...	-2	5	5	1
22	22.1	6	17.7	...	-3	6	7	3
23	22.9	7	18.7	...	-3	7	8	5
24	24.1	8	19.9	..	-1	8	10	7

VK SOUTH — USA/CARIBBEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	22.7	10	17.0	...	4	11	11	7
2	22.8	12	18.8	...	11	15	14	9
3	20.9	15	16.6	-30	18	18	14	7
4	18.5	18	14.6	-4	22	18	12	1
5	17.1	21	13.5	19	27	19	10	-3
6	16.4	24	13.0	35	30	19	8	-6
7	15.6	25	12.4	40	30	17	5	-11
8	14.9	27	11.7	44	29	15	2	-15
9	14.2	26	11.2	44	26	11	-3	-23
10	12.9	27	10.1	43	22	4	-12	-35
11	11.6	30	8.9	42	19	-1	-20	...
12	11.6	29	8.9	42	18	-2	-22	...
13	11.4	29	9.0	41	16	-5	-25	...
14	11.2	24	8.7	28	13	-6	-26	...
15	11.0	18	8.5	12	10	-7	-26	...
16	10.5	10	8.1	-6	5	-9	-26	...
17	9.9	1	7.5	-20	2	-11	-27	...
18	10.1	-3	7.6	-33	1	-9	-23	...
19	12.0	-1	9.5	...	1	-3	-12	-27
20	15.4	2	11.7	...	1	2	-1	-11
21	18.5	5	14.4	..	-1	5	3	-2
22	20.6	6	16.4	...	-3	5	6	2
23	21.5	7	17.4	...	-2	6	7	3
24	22.3	8	18.5	...	0	8	9	5

VK WEST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	21.1	8	17.2	-2	7	8	5	-1
2	21.4	10	17.0	2	10	10	7	0
3	19.0	11	15.1	7	11	9	3	-5
4	16.9	13	13.4	12	12	7	-2	-13
5	15.7	16	12.4	16	12	5	-6	-21
6	14.9	19	11.8	20	13	3	-10	-27
7	14.3	24	11.3	24	13	1	-15	-34
8	13.7	27	10.7	26	12	-1	-20	...
9	13.2	29	10.3	26	11	-4	-24	.
10	12.3	31	9.5	24	6	-10	-33	.
11	11.2	32	8.6	20	0	-20	...	..
12	11.4	32	8.7	21	1	-17		.
13	12.2	30	9.6	22	3	-14	-38	.
14	11.7	27	9.2	18	0	-17	...	...
15	11.1	22	8.6	14	-2	-18		
16	11.0	15	8.4	11	-2	-18	.	.
17	11.0	9	8.5	8	-3	-16	-37	.
18	10.5	1	8.1	5	-4	-17	-36	
19	9.9	-6	7.6	2	-5	-17	-36	.
20	10.0	-9	7.6	1	-4	-15	-32	.
21	12.0	-5	9.5	0	0	-7	-19	-35
22	15.4	1	11.8	-1	3	0	-7	-18
23	18.4	4	14.4	-4	4	4	0	-8
24	20.4	6	16.2	-4	5	6	3	-3

HAMADS

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● ICOM SM-8 microphone with plug, as new $150. Firm price no deals. Roth VK3BG (03) 725 3550.

● UNIDEN 760XLT scanner top condition with orig carton manuals etc. $280. Damien VK3CDI (054) 27 3121.

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FOR SALE QLD

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● KENWOOD TS50S s/n 59604032 never been used, in original carton with mic, op manual, mobile rack, urgent sale $1300. Anne VK4FAB QTHR (070) 53 4115.

● YAGI antenna 6 m band 52-54 MHz, six elements, ARRL design, seven meter boom, very clean pattern, homebrew. Geoff VK4ZGF QTHR (071) 22 1368.

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WANTED VIC

- JENLEX 50 Ohm helical notch filter model HNF2 (4 stage, 1 inch square resonators). David VK3DNG QTHR (03) 859 4698.
- HANDBOOK and/or circuits for Philips FM321 70 cm transceiver will repay costs or copy and return. Dave VK3DHF QTHR (03) 669 4153 BH or (03) 729 5380 AH.
- WANTED BADLY Marconi TF1247 oscillator, also circuits and manuals for Polarad SA-84WA spectrum analyser, and Datapulse 110B pulse generator. Russ VK3KRS (03) 562 6331 after 6 pm weekdays.
- KYOKUTO FM144 — 10 SXR or similar 2 m transceiver, will pay around $100 for a good one. Jim Sosnin VK3TQT QTHR (03) 479 2375 BH or (03) 439 6871 AH.

WANTED SA

- WANTED two or more seven pin 813 valve bases. Murray VK5BVJ QTHR (087) 38 0000.

WANTED TAS

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- HELP needed from DXers. Please donate a few of your unusual call sign prefixes and other Commemorative cards to your National WIA QSL collection. Please contact Hon Curator Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.

ar

VK QSL Bureaux

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

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VK5	PO Box 10092 Gouger Street Adelaide SA 5001
VK6	GPO Box F319 Perth WA 6001
VK7	GPO Box 371D Hobart Tas 7001
VK8	C/o H G Andersson VK8HA Box 619 Humpty Doo NT 0836
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VK4WCH Wednesday at 1000 UTC on 3535 kHz

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